L1 ANSWER 1 OF 13 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1999-159903 [14] WPIX
DNN N1999-116499
TI Metal plate cover for dipole antenna, loop antenna - has metal plate with beam adjustment hole larger than antenna element, such that it is arranged centrally over antenna element on dielectric board.
DC W02
PA (KYOC) KYOCERA CORP
CYC 1
PI JP 11017443 A 19990122 (199914)* 5p H01Q013-18 <--
ADT JP 11017443 A JP 1997-162828 19970619
PRAI JP 1997-162828 19970619
IC ICM H01Q013-18
ICS H01P011-00; H01Q001-00
AB JP 11017443 A UPAB: 19990412
NOVELTY - An antenna element (14) is arranged on a dielectric substrate (13). A metal plate (11) with beam adjustment hole (12) which is larger than the antenna element is attached to the upper surface of the substrate such that the hole is centrally situated over the antenna element.
USE - For dipole antenna, loop antenna, slot antenna, microstrip antenna.
ADVANTAGE - By using dielectric substrate, weight is reduced hence cost is reduced and productivity is improved DESCRIPTION OF DRAWING(S) - The figure shows the perspective diagram of an antenna with metal plate cover. (11) Metal plate; (12) Beam adjustment hole; (13) Dielectric substrate; (14) Antenna element.
Dwg.1/7
FS EPI
FA AB; GI
MC EPI: W02-B02A; W02-B02C; W02-B07A; W02-B08

L1 ANSWER 2 OF 13 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1999-050833 [05] WPIX
DNN N1999-037700
TI IC chip mounting method - involves attaching cladding sheets on either surfaces of mounting sheet on which IC chips sealed using thermosetting resin are arranged.
DC V04
PA (TOKE) TOSHIBA KK
CYC 1
PI JP 10302040 A 19981113 (199905)* 10p G06K019-077 <--
ADT JP 10302040 A JP 1997-112831 19970430
PRAI JP 1997-112831 19970430
IC ICM G06K019-077
ICS H05K003-00
AB JP 10302040 A UPAB: 19990203
The method involves mounting an IC chip (12) inside a device hole (13) which is formed on a mounting sheet (11). The IC chip is sealed using a thermosetting resin. A pair of outer cladding sheets (32,33) are attached on either surfaces of the mounting sheet using a thermosetting adhesive agent (43).

The thermosetting adhesive is hardened in order to bind the outer cladding sheets with the mounting sheet. Punching is carried out on the mounting sheet with outer cladding sheet in order to form an IC card of required shape.

USE - For IC card manufacture.

ADVANTAGE - Requires less welding pressure. Prevents damage of external surface of outer cladding sheets.

Dwg.1/11
FS EPI
FA AB; GI
MC EPI: V04-R

L1 ANSWER 3 OF 13 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1999-024809 [02] WPIX
DNN N1999-018981
TI Response device in IC card communication system - has IC chip that adjusts resonance frequency of antenna automatically.
DC P76 T04 W02
IN IKEFUJI, Y; OKADA, H
PA (ROHL) ROHM CO LTD
CYC 24
PI WO 9853423 A1 19981126 (199902)* JA 50p G06K019-077
RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE
W: AU CA CN KR US
JP 10320519 A 19981204 (199908) 20p G06K019-07 <--
AU 9872382 A 19981211 (199917) G06K019-077
EP 1014301 A1 20000628 (200035) EN G06K019-077
R: DE FR GB NL
CN 1255995 A 20000607 (200046) G06K019-077
KR 2000075503 A 20001215 (200131) G06K019-077
IC ICM G06K019-07; G06K019-077
ICS B42D015-10; G06K017-00; G06K019-073
AB WO 9853423 A UPAB: 19990113
The IC card (80) has a communication module buried in a core (30). In order to facilitate the assembly work of the module (20), contact terminals (24), an antenna (60) and an IC chip (82) are mounted on one board (22). The contact terminals (24) are formed,on the upper surface of the board (22) as to be exposed from an opening (26a) of a surface layer (26).

The antenna (60) and the IC chip (82) are so provided on the lower surface of the board (22) opposite to the contact terminals (24). The IC chip (82) adjusts the resonance frequency of the antenna (60) automatically.

ADVANTAGE - Compact assembly, maximise output from antenna.

Dwg.2/20
FS EPI GMPI
FA AB; GI
MC EPI: T04-K; W02-C02G7; W02-G05A

L1 ANSWER 4 OF 13 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1998-475904 [41] WPIX
DNN N1998-371937
TI Non-contact IC card - includes pair of cover sheets of thermobonding property are bonded through centre sheet by performing heat pressing.
DC P76 T04 W02
PA (NIPQ) DAINIPPON PRINTING CO LTD
CYC 1
PI JP 10203061 A 19980804 (199841)* 5p B42D015-10 <--
ADT JP 10203061 A JP 1997-8423 19970121
PRAI JP 1997-8423 19970121
IC ICM B42D015-10
ICS G06K019-07; G06K019-077
AB JP 10203061 A UPAB: 19981014
The IC card includes a pair of thermobonding cover sheets (4a,4b). The cover sheet is bonded through a centre sheet (3) by heat pressing. A pair of holes (3a) are formed in the centre sheet at predetermined portion.

The isolated portion of the centre sheet acts as a module package (10). The electronic components such as IC, antenna coil are sealed using resin.

ADVANTAGE - Prevents generation of curvature in IC card.

Dwg.2/6
FS EPI GMPI
FA AB; GI
MC EPI: T04-K; W02-C02G7

L1 ANSWER 5 OF 13 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1998-006484 [01] WPIX
DNN N1998-005322 DNC C1998-002279
TI Carrier for IC memory chip - has base with sheet-like reinforcement object which is capable of deformation along thickness direction and is coated with resin.
DC A85 L03 P76 T01 T04 U11 U14
IN DAIDO, K; KOHAMA, K; TAKASUGI, W
PA (HITM) HITACHI MAXELL KK
CYC 2
PI JP 09275184 A 19971021 (199801)* 16p H01L025-00
US 5856662 A 19990105 (199909) G06K019-06 <--
ADT JP 09275184 A JP 1996-147345 19960610; US 5856662 A US 1996-671634 19960628
PRAI JP 1996-19129 19960205; JP 1995-164038 19950629
IC ICM G06K019-06; H01L025-00
ICS B42D015-10
AB JP 09275184 A UPAB: 19980107
The carrier has a base (3) of regular shape and size. An IC module (1) and a coil (2) are mounted on the base. The base has a sheet-like reinforcement object (7) which is capable of deformation along the thickness direction. A resin (8) is coated on the reinforcement object.

The resin is hardened and the base is maintained at a constant shape and intensity. By changing a part of the reinforcement object, the mounting component is embedded in the hollow formed on the base.

USE/ADVANTAGE - For memory storing information such as commuter's ticket information, license information, health information, identification information, product management information in factory. Offers positioning accuracy. Raises reliability and endurance of framework. Offers superior information carrier. Excels in productivity.
Dwg.2/32
FS CPI EPI GMPI
FA AB; GI
MC CPI: A12-E07C; L03-G04A; L04-F
EPI: T01-C11; T04-K01; U11-D01A7; U11-E02A2; U14-H01D
PLE UPA 19980126
[1.1] 018; P0000; M9999 M2073; L9999 L2391; L9999 L2073
[1.2] 018; ND01; Q9999 Q7114-R; Q9999 Q7476 Q7330; K9892; K9483-R; K9712 K9676; K9676-R

L1 ANSWER 6 OF 13 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1996-448658 [45] WPIX
DNN N1996-378228
TI Inductor element mfg method e.g. for MMIC for mobile communication, satellite communication, satellite broad casting system - involves positioning inductor element on semiconductor substrate in gap between wiring layer using trenches formed on substrate.
AW MONOLITHIC MICROWAVE IC.
DC U12 U14
PA (HITA) HITACHI LTD
CYC 1
PI JP 08222695 A 19960830 (199645)* 8p H01L027-04 <--
ADT JP 08222695 A JP 1995-23717 19950213
PRAI JP 1995-23717 19950213
IC ICM H01L027-04
ICS H01F017-00; H01F041-04; H01L021-822
AB JP 08222695 A UPAB: 19961111
The method involves positioning the inductor element on a semiconductor substrate (10) of high dielectric constant in the gap between the wiring layers (13).

For the positioning of inductor, trenches (102) are provided on the substrate.

ADVANTAGE - Provides low loss inductor element and gain MMIC. Reduces power consumption. Reduces capacitance between wirings.

Dwg.1/9
FS EPI
FA AB; GI
MC EPI: U12-C03; U12-Q; U14-H03C2

FILE 'WPIX, JAPIO, HCAPLUS' ENTERED AT 08:24:12 ON 25 MAR 2002
L1 13 S (JP10203061 OR JP08222695 OR JP11017443 OR US5856662 OR JP10320519 OR JP10302040)/PN
SET SMARTSELECT ON
L2 SEL L1 1- PRN : 7 TERMS

FILE 'HCAPLUS' ENTERED AT 08:25:56 ON 25 MAR 2002
L3 2 S (JP10203061 OR JP08222695 OR JP11017443 OR US5856662 OR JP10320519 OR JP10302040)/PN
L4 0 S L2
L5 SEL PLU=ON L3 1- RN : 4 TERMS
L6 327863 S L5
L7 1 S L3 AND L6
L8 1 S L3 NOT L7

FILE 'WPIX, JAPIO, HCAPLUS' ENTERED AT 08:29:34 ON 25 MAR 2002
L9 SEL PLU=ON L1 1- AP : 17 TERMS

FILE 'HCAPLUS' ENTERED AT 08:30:06 ON 25 MAR 2002
L10 2 S L9
L11 0 S L10 NOT L3

FILE 'DPCI' ENTERED AT 08:36:45 ON 25 MAR 2002
L12 6 S (JP10203061 OR JP8222695 OR JP08222695 OR JP11017443 OR US5856662 OR JP10320519 OR JP10302040)/PN.D,PN.G
L13 2 S (JP10203061 OR JP8222695 OR JP08222695 OR JP11017443 OR US5856662 OR JP10320519 OR JP10302040)/PN
L14 8 S (L12 OR L13)
L15 SEL L14 1- IC : 21 TERMS
L16 SEL L14 1- PRN : 10 TERMS

FILE 'INPADOC, WPIX, JAPIO, HCAPLUS' ENTERED AT 09:08:52 ON 25 MAR 2002
L20 18266 S (COIL OR ANTENNA OR LOOP OR DIPOLE) AND (IC OR ICS OR INTEGRATED CIRCUIT OR INFORMATION CARRIER OR (TELECOMMUNICATION OR COMMUNICATION)(W) DEVICE)
L21 1734 S L20 AND INDUCT#####
L22 199 S L20 AND ((MULTI OR MULTIPLE)(W) LAYER### OR MULTILAYER#####)
L23 28 S L22 AND CONDUCTOR AND COIL
L24 45 S L21 AND L22
L25 81 S L20 AND (EXTEND##### OR LONG#### OR GREATER OR COMMUNICATION OR TELECOMMUNICATION)(2A) RANGE
L26 19 S L20 AND METAL(2A)(SPUTTER#### OR EVAP OR EVAPN OR EVAPD OR EVAPORAT#######)
L27 76 S L20 AND METAL(2A) PLAT###
L28 108 S L20 AND (IC OR INTEGRATED CIRCUIT)(W) ELEMENT
L29 1 S L20 AND (ELECTROFORM#### OR ELECTRO FORM###)
L30 0 S L20 AND LIGA
L31 405 S L20 AND PRECIS#####
L32 24 S L27 AND (FORM### OR FORMATION)(3A)(METAL OR PLAT###)
L33 1823 S L20 AND SUBSTRATE
L34 875 S L20 AND CARRIER
L35 148 S L20 AND (CENTER OR CENTRE OR CENTRAL## OR MIDDLE)(5A)(STRUCTURE OR IC OR ELEMENT OR INTEGRATED)
L36 84 S L20 AND STRIP(4A)(MATERIAL OR MOUNT### OR PARTS OR IC OR ICS OR INTEGRATED OR ELEMENT)
L37 136 S L20 AND BOOST#####
L38 6 S L20 AND STRIP(2A)(BOND### OR ADHER#### OR ADHES#####)
L39 0 S L20 AND STRIP(A) PUNCH######
L40 84 S L20 AND PUNCH#####
L41 8 S L20 AND PUNCH######(8A)(BOND### OR ADHER#### OR ADHES##### OR MOUNT######)

FILE 'INPADOC, WPIX, JAPIO, HCAPLUS' ENTERED AT 09:08:52 ON 25 MAR 2002
L42 1 S L20 AND BOOST#####(5A)(BOND#### OR RING OR RINGLIKE OR RECESS#### OR ADHER##### OR ADHES######)
L43 387 S L20 AND EMBED#####
L44 167 S L20 AND EMBED#####(4A)(BOOST##### OR COIL OR ANTENNA###)
L45 3 S L20 AND IMBED#####(4A)(BOOST##### OR COIL OR ANTENNA###)
L46 9 S L20 AND IMBED#####
L47 41 S L20 AND POTT####
L48 45 S L21 AND L22
L49 77 S L21 AND 23
L50 45 S L21 AND L24
L51 6 S L21 AND L25
L52 10 S L21 AND L27
L53 14 S L21 AND L28
L54 34 S L21 AND L31
L55 38 S L21 AND 33
L56 13 S L21 AND L35
L57 14 S L21 AND L36
L58 15 S L21 AND L37
L59 5 S L21 AND L40
L60 55 S L21 AND L43
L61 20 S L21 AND L44
L62 3 S L21 AND L47
L63 11 S L21 AND L23
L64 1 S L20 AND (SINGLE OR UNITARY OR ONE)(W)STRIP
L65 235 S L26 OR L32 OR L38 OR (L40 OR L41) OR (L45 OR L46) OR (L51 OR L52 OR L53) OR (L56 OR L57 OR L58 OR L59) OR (L61 OR L62 OR L63 OR L64)
L66 0 S L20 AND (PUNCH##### AND STRIP AND BOOST####)
L67 8 S L20 AND ((PUNCH##### AND STRIP) OR (PUNCH##### AND BOOST####) OR (BOOST##### AND STRIP))
L68 32 S L65 AND STRIP
L69 24 S L68 NOT L67
L70 2 S L65 AND INTEGRAL###/TI
L71 1 S L70 NOT L68
L72 70 S (L26 OR L29 OR L32 OR L38 OR (L41 OR L42) OR (L45 OR L46) OR L51 OR L59 OR L62 OR L64) NOT (L68 OR L70)
L73 61 S L72 AND (INTEGRATED CIRCUIT OR ICS OR CIRCUIT#### OR TELECOMMUNICAT##### OR COMMUNICAT##### OR INFORMATION CARRIER OR MEMORY(2A) CHIP)
L74 251120 S L15
L75 3045 S L20 AND L74
L76 95 S L75 AND L44
L77 5114 S (L21 OR L22) OR L25 OR (L27 OR L28) OR (L31 OR L32 OR L33 OR L34 OR L35 OR L36 OR L37) OR L40 OR (L43 OR L44) OR L47 OR L65
L78 5011 S L77 NOT (L68 OR L70 OR L72)
L79 808 S L78 AND (CONTACTLESS## OR NONCONTACT#### OR NON CONTACT### OR CONTACT LESS##)
L80 3 S L79 AND (SPUTTER### OR EVAP OR EVAPD OR EVAPN OR EVAPORAT##### OR MMIC OR MULTILEVEL### OR MULTI LEVEL### OR MULTIPLE LEVEL###)
L81 63 S L79 AND PLAT####
L82 3 S L81 AND (CU OR COPPER OR COPPER/CN)
L83 63 S L81 NOT L80
L84 3 S L82 NOT L80
L85 0 S L79 AND METALPLAT######
L86 4 S L79 AND (RECTANG#####(2A)(PATTERN#### OR PLANAR###) OR SPIRAL##(2A)(RECTANG##### OR PATTERN#### OR PLANAR###) OR PATTERN###(2A) PLANAR###)
L87 4 S L86 NOT L84
L88 3 S L20 AND (HITACHI?/PA,CS AND (KAWAMURA S? OR SHIMIZU S?)/AU,IN)

09/914,077

FILE 'DPCI' ENTERED AT 12:55:54 ON 25 MAR 2002
L1 8 S (JP10203061 OR JP08222695 OR JP11017443 OR US5856662 OR JP103
E WO200137213/PN

=> sel l1 pn.d

E1 THROUGH E66 ASSIGNED

L2 648 (EP350179/PN.D OR EP326822/PN.D OR EP503782/PN.D OR FR2601477/PN.D OR DE3338597/PN.D OR FR2520541/PN.D OR GB2166589/PN.D OR US4897534/PN.D OR DE3151408/PN.D OR EP189039/PN.D . . . .)
L3 24 L2 AND H01L025?/IC
L4 95 L2 AND (CONTACT###### OR NONCONTACT######)
L5 22 L2 AND (ANRENNA#### OR COIL#)
L6 130 (L3 OR L4 OR L5)

=> sel prn

E67 THROUGH E268 ASSIGNED

=> file wpix japio hcaplus tulsa;s e67-268

FILE 'WPIX' ENTERED AT 13:06:57 ON 25 MAR 2002
FILE 'JAPIO' ENTERED AT 13:06:57 ON 25 MAR 2002
FILE 'HCAPLUS' ENTERED AT 13:06:57 ON 25 MAR 2002
FILE 'TULSA' ENTERED AT 13:06:57 ON 25 MAR 2002

L7 233 (US1997-856534/PRN OR US1992-870887/PRN OR AT1995-422U/PRN OR BE1988-1103/PRN OR CH1993-804/PRN OR DE1980-3043877/PRN OR DE1980-3046192/PRN OR DE1983-3338597/PRN OR DE1986-3639630/PRN OR DE1990-4007221/PRN OR DE1990-4040296/PRN OR DE1991-4126874/PRN OR DE1993-4337921/PRN OR DE1993-4345419/PRN OR DE1993-4345455/PRN OR . . . .)

L8 145 L7 AND (CONTACT###### OR NONCONTACT######)
L9 33 L8 AND (ANTENNA#### OR COIL)
L10 23 L9 AND (H01L025?/IC OR (T04-K01 OR U12-C03 OR U12-Q OR U13-E03 OR U14-H01C OR W02-B01A)/MC)
L11 10 L9 AND (W02-C02B OR W02-C02G7 OR W02-G05A)/MC
L12 28 (L10 OR L11)
L13 28 L12 NOT PRY>1999
L14 29 L7 AND (CENTRE##### OR CENTRAL### OR CENTER#### OR MIDDLE OR MID OR MIDWAY)
L15 17 L14 AND (ANTENNA#### OR COIL OR SPIRAL### OR TERMINA#####)
L16 17 L15 NOT PRY>1999
L17 29 L14 OR L15

L17 ANSWER 1 OF 29 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD

AN 2001-201283 [20] WPIX
CR 1992-132352 [16]; 1994-293619 [36]; 1997-525801 [48]; 1997-558042 [51]; 1999-069315 [06]; 1999-080544 [07]; 1999-560234 [44]
DNN N2001-143389
TI **Semiconductor chip assembly for electronic device, has interposer verlying the chip and provided with terminals which contact central contact leads and move with respect to chip contacts.**
DC U11
IN DISTEFANO, T H; KHANDROS, I Y
PA (TESS-N) TESSERA INC
PI US 6133627 A 20001017 (200120)* 41p H01L023-48
PRAI US 1993-30194 19930428; US 1990-586758 19900924; US 1991-673020 19910321; US 1991-765928 19910924; US 1994-319966 19941007; US 1997-861280 19970521; US 1997-984615 19971203
AB US 6133627 A UPAB: 20010410
NOVELTY - The semiconductor chip (8420) has central contacts (8431) disposed in central region of chip front surface. Interposer (8436) overlying the chip front surface has an edge-bounded hole (8480) encompassing the central contacts. Terminals (8448,8472) disposed on interposer are coupled to central contact leads (8450,8475) and move with respect to contacts for compensation of thermal expansion.

USE - For electronic device.

ADVANTAGE - Temperature expansion of the chip is compensated effectively. Since the terminals and the contact pads on the substrate overlie on the chip front surface, the assembly is compact.

DESCRIPTION OF DRAWING(S) - The figure shows the plan view of the chip assembly.

Semiconductor chip 8420
Central contact 8431
Interposer 8436
Terminals 8448,8472
Contact leads 8450,8475
Edge-bounded hole 8480

L17 ANSWER 2 OF 29 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD

AN 2001-030748 [04] WPIX
CR 1994-000859 [01]; 1994-217039 [26]; 1994-366420 [45]; 1995-319977 [41];
DNN N2001-024004
TI **Radio frequency identification transceiver for baggage handling system in airports, has dipole antennas with contacts which are connected to respective contacts in transceiver circuit.**
IN LAKE, R C; TUTTLE, J R
PA (MICR-N) MICRON COMMUNICATIONS INC
PI US 6078791 A 20000620 (200104)* 19p H04B001-38
PRAI US 1993-123030 19930914; US 1992-899777 19920617; US 1995-489185 19950609; US 1997-908134 19970806
AB US 6078791 A UPAB: 20011113
NOVELTY - Radio frequency identification (RFID) circuit mounted on thin planar substrate, has receiver and transmitter antenna contacting to each other. Dipole antennas which are perpendicular to each other are provided intersecting at centers of substrate. The dipole antennas are connected to the respective antenna contacts in the transceiver circuit.

USE - For baggage handling system in airports to manage delivery of parcels and mail and other inventory control. Also for use in monitoring movement of railroad cars, plant and animal tracking.

ADVANTAGE - Avoids errors or improper operation due to extraneous signal sources, by using radio frequency transceivers on single integrated circuit.

DESCRIPTION OF DRAWING(S) - The figure shows the perspective view of the integrated circuit mounted on parallel plate capacitor

Dwg.5A/12
FS EPI
FA AB; GI
MC EPI: T04-K01; W02-B01B; W02-B08C3; W02-G05A; W06-A04B1; W06-A04B5; W06-B02A5; X25-N02

L17 ANSWER 3 OF 29 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD

AN 1999-591396 [50] WPIX
DNN bv N1999-436173
TI Data carri r such as credit card with implanted m tal l ad frame bas d module for contactless communication.
IN RIENER, T; SCHMALLEGGER, P
PA (PHIG) KONINK PHILIPS ELECTRONICS NV; (PHIG) US PHILIPS CORP; (PHIG)
PI WO 9950792 A1 19991007 (199950)* EN 16p G06K019-077
EP 998725 A1 20000510 (200027) EN G06K019-077
US 6321993 B1 20011127 (200175) G06K019-06
JP 2002500794 W 20020108 (200206) 14p G06K019-077
PRAI EP 1998-890083 19980327
AB WO 9950792 A UPAB: 19991201
NOVELTY - A module (4) having contact configuration (5) and chip (6) is implanted in a recess (3). Two contacts of module are connected to chip contacts (50,51) and coil contacts (52,53) of transmission coil (54) in data carrier. The contact configuration made by metal lead frame, has coplanar sides (16,17) and central section (18), which are mechanically connected to chip cover (7).

DETAILED DESCRIPTION - The chip cover made of electrically insulating metal covers the module contacts and chip. The contact configuration is covered by an insulating layer (60) made of polyvinyl chloride in the form of label.

USE - For e.g. credit card used in contactless communication.

ADVANTAGE - The module is manufactured using metal lead frame which is cheaper than epoxy lead frame. The side and central sections of data carrier is made of conductive metal or its alloy, preferably a copper alloy which are comparatively flexible, thus, enables withstanding large load without causing adverse effects. The contact configuration requires only small height as central side sections of module are of less thickness.

DESCRIPTION OF DRAWING(S) - The figure is the sectional view of data carrier.

Recess 3
Module 4
Contact configuration 5
Chip 6
Chip cover 7
Coplanar sides 16,17
Central section 18
Chip contacts 50,51
Coil contacts 52,53
Transmission coil 54
Insulating layer 60
Dwg.2/2
FS EPI
FA AB; GI
MC EPI: T04-K01

L17 ANSWER 4 OF 29 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD

AN 1999-560234 [47] WPIX
CR 1992-132352 [16]; 1994-293619 [36]; 1997-525801 [48]; 1997-558042 [51]; 1999-069315 [06]; 1999-080544 [07]; 2001-201283 [63]
DNN N1999-413825
TI S miconductor chip assembly manufacturing method for electronic package.
IN DISTEFANO, T H; KHANDROS, I Y
PA (TESS-N) TESSERA INC
PI US 5950304 A 19990914 (199947)* 38p H05K013-04
PRAI US 1991-765928 19910924; US 1990-586758 19900924; US 1991-673020 19910321; WO 1991-US6920 19910924; US 1993-30194 19930428; US 1994-319966 19941007; US 1997-861280 19970521
AB US 5950304 A UPAB: 20010410
NOVELTY - A semiconductor chip (8420) has a central region with central contacts (8431) on its surface. A dielectric element (8436), e.g. an interposer, has terminals (8448,8452,8472) around a central opening (8480) laid on the chip so that the opening encloses the central contacts. The central contacts are connected by leads to the terminals on the dielectric element.

USE - For use in electronic packaging.

ADVANTAGE - Enables terminals to move relative to the chip parallel to the chip surface, to compensate for differential thermal expansion of the chip and a substrate. Enables burn-in tests to be performed before mounting a chip on a substrate.

DESCRIPTION OF DRAWING(S) - The figure shows a plan view of the semiconductor chip assembly.

Semiconductor chip 8420
Central contacts 8431
Terminals 8448,8452,8472
Central opening 8480

Dwg.18/30
FS EPI
FA AB; GI
MC EPI: U11-D03A2; V04-R04F

L17 ANSWER 5 OF 29 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1999-442814 [37] WPIX
CR 1990-209965 [27]; 1990-253622 [33]; 1990-267979 [35]; 1990-368343 [49]; DNN N1999-330130
TI El ctrostatic discharge (ESD) protecti n circuit for electronic tok n used for data transf r applicati ns.
IN LEE, R D
PA (DALL-N) DALLAS SEMICONDUCTOR INC
PI US 5920096 A 19990706 (199937)* 56p H01L023-60
PRAI US 1989-352581 19890515; US 1993-19932 19930219; US 1994-348513 19941201
AB US 5920096 A UPAB: 20010716
NOVELTY - The circuit includes a p-well intermediate region (121B) formed within an n-well (113) formed in a p-substrate (140). An n-diffusion region (122) is centered within the p-well and surrounded by a p-diffusion ring (121A). An n-diffusion ring (113A) is within the n-well and about the p-well. A second p-diffusion ring (140B) surrounds the n-well. An ohmic connection (132) exists between the three diffusion rings. An output transistor (150) in the substrate has a source/drain (151) connected to an input/output node which is ohmically connected to the n-diffusion region.
DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for an integrated circuit (IC) with the ESD protection circuit.
USE - For an electronic token used for data transfer applications such as inventory control, machinery maintenance records, retail tagging, smart cards, personnel identification badges, electronically verified currency, etc.
ADVANTAGE - Protects against data loss under severe ESD conditions.
DESCRIPTION OF DRAWING(S) - The drawing shows a diffusion structure connected to provide ESD protection for an input/output connection of a battery-powered IC.
n-well 113
n-diffusion ring 113A
p-diffusion ring 121A
p-well intermediate region 121B
n-diffusion region 122
ohmic connection 132
p-substrate 140
second p-diffusion ring 140B
output transistor 150
source/drain 151
Dwg.16N/20
FS EPI
FA AB; GI
MC EPI: T04-K01; U11-D01C3; U13-E01; W01-A03A3; W01-A06B1

L17 ANSWER 6 OF 29 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD

AN 1999-081477 [07] WPIX
DNN N1999-058565
TI El ctronic micro-module particularly for smart card - has antenna formed n underside of card with circuit chip in centre of antenna and v rlapping it, and has contacts on top face of card.
AW NON-CONTACT OR HYBRID CARDS.
IN KOWALSKI, J; SERRA, D
PA (INSI-N) INSIDE TECHNOLOGIES SA; (INSI-N) INSIDE TECHNOLOGIES
PI WO 9859319 A1 19981230 (199907)* FR 26p G06K019-077
FR 2765010 A1 19981224 (199907) G06K019-077
ADT WO 9859319 A1 WO 1998-FR1198 19980611; FR 2765010 A1 FR 1997-8083 19970620
PRAI FR 1997-8083 19970620
AB WO 9859319 A UPAB: 19990217
Th electronic micro-module (1) has a coil antenna (5) and a support plate (2), with electrical contacts (C1-C8) on the front face (2-2) and integrated circuit (3) on the rear face (2-1).
The coil antenna is formed on the rear face of the support, running round the outer periphery of the support in a magnetically permeable zone of the support. The integrated circuit is placed in the centre of the antenna and overlaps the antenna. The underside of the card is coated with a protective layer to prevent damage to the microcircuit and to the antenna.
USE - USE - Electronic module for smart cards operating in contact mode or in hybrid mode with mixed contact and non-contact mode.
ADVANTAGE - ADVANTAGE - Simply and cheaply manufactured smart card that provides reliable connection of antenna to the microcircuit.
Dwg.1/9
FS EPI
FA AB; GI
MC EPI: T04-K; W02-C02B; W02-C02G7

L17 ANSWER 7 OF 29 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD

AN 1999-080544 [07] WPIX
CR 1992-132352 [16]; 1994-293619 [36]; 1997-525801 [48]; 1997-558042 [51]; 1999-069315 [06]; 1999-560234 [44]; 2001-201283 [63]
DNN N1999-057951
TI S miconductor chip assembly for modern electronic device - has backing element equipped with electrically conductive terminals movable with respect to semiconductor chip.
IN DISTEFANO, T H; KHANDROS, I Y
PA (TESS-N) TESSERA INC
PI US 5852326 A 19981222 (199907)* 38p H01L023-48
PRAI US 1991-765928 19910924; US 1990-586758 19900924; US 1991-673020 19910321; WO 1991-US6920 19910924; US 1993-30194 19930428; US 1994-319966 19941007; US 1997-861280 19970521; US 1998-110527 19980706
AB US 5852326 A UPAB: 20010410
The assembly has a semiconductor chip (920) with a front surface (922) having several contacts (928). A backing element (932) with electrically conductive terminals (946) and lead portions (948) is arranged overlying on the rear surface of the semiconductor chip. The lead portions are connected to the contacts by bonding wires (974). The electrically conductive terminals are movable with respect to the semiconductor chip.

ADVANTAGE - Provides compensation for differential thermal expansion of chip and substrate by moving terminals in direction parallel to chip surface. Provides compact structure by arranging contacts and electrically conductive terminals overlying on front and rear surfaces of chip. Utilises short bonding wires having low inductance. Prevents damage of leads during formation of apertures in leads. Facilitates electrical testing of chip and other components for prolonged period by making good electrical contact between probes and terminals at once. Prevents generation of stress in bonding area of central terminals and contact pads. Minimises need for closely controlling wire bonding operation. Dwg.26/30
FS EPI
FA AB; GI
MC EPI: U11-D03A; U11-D03B3; U14-H03A2

L17 ANSWER 10 OF 29 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD

AN 1998-483419 [42] WPIX
CR 1998-483418 [42]
DNN N1998-377157 DNC C1998-146282
TI **Plastic token containing electronic chip for contactless identification or gaming - comprises ring between two discs containing electronic circuit and peripheral antenna.**
DC A86 P23 T04 T05 W04
IN BOIRON, D; CHAPET, P; GASSIES, C; CHARLIER, G
PA (BOUR-N) ETAB BOURGOGNE & GRASSET SA; (BOUR-N) ETAB BOURGOGNE & GRASSET
CYC 19
PI FR 2760331 A1 19980911 (199842)* 21p A44C021-00
WO 9839989 A1 19980917 (199843) FR A44C021-00
EP 973420 A1 20000126 (200010) FR A44C021-00
R: AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
US 6264109 B1 20010724 (200146) G06K019-06
PRAI FR 1997-2784 19970310; FR 1997-2783 19970310
AB FR 2760331 A UPAB: 20010815
A token, e.g. a gambling chip, is basically flat and comprises two plastic discs (10,12) attached to opposite sides of a spacer ring (14) which forms a central inner cavity containing an electronic circuit (24) and a peripheral antenna (26). The electronic circuit incorporates a memory with identity or coded information pertaining to the person using the token or to its value as a gambling chip.

The two discs are made from a polymer material selected from: PMMA, ABS, polyamides and their copolymers; polyacetal and acetal copolymers (POM); poly(alkylene terephthalate), esp. polybutylene terephthalate; polyurethanes; vinyl polymers or PVC; or polyolefins, esp. polyethylene and polypropylene.

ADVANTAGE - Simple, robust and compact in design. Easy to manufacture, permitting a certain automation of manufacture.
Dwg.3/6

L17 ANSWER 12 OF 29 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1997-204303 [19] WPIX DNN N1997-168560
TI Chip modul for inclusi n in base of el ctronic chip board e.g. modul with g ld island - has substrate strip with predetermined area at which chip is connected to bas with heat insulating layer on strip.
IN HOUDEAU, D; KIRSCHBAUER, J; MENSCH, H; STAMPKA, P; STECKHAN, H
PA (SIEI) SIEMENS AG
PI DE 19535989 A1 19970403 (199719)* 6p H01L021-58
WO 9712341 A1 19970403 (199719) DE 19p G06K019-077
DE 19535989 C2 19970717 (199732) 6p H01L021-58
EP 852774 A1 19980715 (199832) DE G06K019-077
JP 10512380 W 19981124 (199906) 20p G06K019-077
EP 852774 B1 19990203 (199910) DE G06K019-077
DE 59601281 G 19990318 (199917) G06K019-077
ES 2128872 T3 19990516 (199926) G06K019-077
US 6072698 A 20000606 (200033) H05K001-14
JP 3199747 B2 20010820 (200149) 5p G06K019-077
PRAI DE 1995-19535989 19950927
AB DE 19535989 A UPAB: 19970512
The module has a flexible substrate strip (2). Flat metal contacts (10) ar applied on one side of the strip (2). At least one electronic component (3) is attached to the other side of the strip (2) and is electrically connected to the contacts (10). The chip module is connected to the base body (7) via a predetermined surface of the strip (2). A heat insulating layer is provided between the electronic component (3) and the strip (2).

In another arrangement, recesses are provided inside the surface of the metal contacts. These prevent the heat flow from an annular hollow die (1) at the outer region of the metal contacts from flowing in the direction of the centrally mounted electronic component (3).

USE/ADVANTAGE - Prevents delamination between cover and electronic component, and resulting function loss, when making connection between chip and circuit board. May also be used with modules without gold island.

L17 ANSWER 13 OF 29 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD

AN 1997-111220 [11] WPIX
DNN N1997-092021
TI **Manufacture of smart card - has chip on carrier embedded in aperture in centre layer with carrier and contacts located in aperture in cover layer.**
DC T04 V04
IN HAGHIRI-TEHRANI, Y; OJSTER, A; OERTEL, A; TEHRANI, H
PA (GIES-N) GIESECKE & DEVRIENT GMBH
CYC 9
PI EP 757330 A2 19970205 (199711)* DE 11p G06K019-077
R: BE DE ES FR GB GR IT NL
DE 19528730 A1 19970206 (199711) 9p G06K019-00
US 5851854 A 19981222 (199907) H01L021-44
ADT EP 757330 A2 EP 1996-112537 19960802; DE 19528730 A1 DE 1995-19528730 19950804; US 5851854 A US 1996-691376 19960802
PRAI DE 1995-19528730 19950804
REP No-SR.Pub
IC ICM G06K019-00; G06K019-077; H01L021-44
ICS B41M001-12; B41M005-26; B42D015-10
AB EP 757330 A UPAB: 19970313
A 'smart' card is produced with a number of layers of plastic e.g. PVC. At a specific location there is an aperture [20] in the centre layer and into this an integrated chip set in a protective material is embedded. The surrounding space is filled with a suitable thermoplastic [7] that deforms when the layers are bonded in a pressing operation. The chip is attached to a carrier [8b] having contacts [2] projecting into a top opening [6].
USE/ADVANTAGE - Smart cards, for banking transactions. Simple and cost effective, no deformation of card shape.
Dwg.2/11

L17 ANSWER 14 OF 29 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD

AN 1996-434060 [43] WPIX
DNN N1996-365670
TI Package and housing for encasing multiple semic nductor di s - has lead-frame with paddle supporting flexible circuit and dies connected to circuit and wire bonded to lead fingers.
IN KUHN, H A
PA (ITLC) INTEL CORP
PI WO 9628860 A1 19960919 (199643)* EN 27p H01R009-09
AU 9651895 A 19961002 (199703) H01R009-09
EP 815615 A1 19980107 (199806) EN H01R009-09
US 5719436 A 19980217 (199814) 11p H01L023-495
US 5793101 A 19980811 (199839) H01L023-495
JP 11502063 W 19990216 (199917) 31p H01L025-065
KR 98702651 A 19980805 (199932) H01R009-09
KR 272846 B 20001115 (200170) H01L023-495
PRAI US 1995-402933 19950313; US 1997-781358 19970121
AB WO 9628860 A UPAB: 19961025
The package includes a central leadframe paddle (20) and a number of lead fingers (21). The fingers are close to but not contacting the paddle. The paddle and fingers are formed by conventional means. A flexible circuit (27) is adhesively attached to both the upper and lower sides of the paddle by any conventional method.

The circuit has a number of interconnects and bonding pads (28). Two semiconductor dies are connected to the flexible surface, one on either side of the paddle. The dies are then wire-bonded to the flexible circuit and to the fingers. The dies are encapsulated in a secure coating (40) and housed in plastic (50).

USE/ADVANTAGE - For multiple dies of different sizes. Protects against security intrusion.

Dwg.2/5
ABEQ US 5719436 A UPAB: 19980406
The package includes a central leadframe paddle (20) and a number of lead fingers (21). The fingers are close to but not contacting the paddle. The paddle and fingers are formed by conventional means. A flexible circuit (27) is adhesively attached to both the upper and lower sides of the paddle by any conventional method.

The circuit has a number of interconnects and bonding pads (28). Two semiconductor dies are connected to the flexible surface, one on either side of the paddle. The dies are then wire-bonded to the flexible circuit and to the fingers. The dies are encapsulated in a secure coating (40) and housed in plastic (50).

USE/ADVANTAGE - For multiple dies of different sizes. Protects against security intrusion.

Dwg.2/5

L17 ANSWER 15 OF 29 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD

AN 1995-180038 [24] WPIX
DNN N1995-141315 DNC C1995-083432
TI Contactless chip card, linked to scanner - has a structured laminated assembly which av ids tensi n p aks esp cially n bending.
DC A85 T04 U11 V02 V04
IN MICHALK, M
PA (MICH-I) MICHALK M; (ODSO-N) ODS OLDENBOURG DATENSYSTEME GMBH R
CYC 1
PI DE 4337921 A1 19950511 (199524)* 11p G06K019-077
DE 4345419 A1 19970814 (199738) G06K019-077
DE 4345455 A1 19980226 (199814) G06K019-077
DE 4345473 A1 19980813 (199838)# G06K019-077
DE 4337921 C2 19980903 (199839) G06K019-077
PRAI DE 1993-4337921 19931106; DE 1993-4345419 19931106; DE 1993-4345455 19931106; DE 1993-4345473 19931106
IC ICM G06K019-077
ICS H01F017-00; H01L023-50; H05K001-18; H05K003-30; H05K003-36
AB DE 4337921 A UPAB: 19950626
The contactless chip card has an antenna coil (7) and leads and/or contact points (10) on a conductor path film (6) of flexible and electrically insulating material. Each semiconductor chip is in a chip housing (1) centrally in the laminated structure of the chip card. A housing film (4) is in a central layer, of flexible and electrically insulating material, extending from the housing (1), for external electrical conductors (3) with the outer connections (5). Also claimed is a mfg. process where the connection points (5) are brought to a chip housing (1) for the external electrical conductors (3), with the contact points (10) of the conductor film (6). They are bonded by lamination.

USE - The chip card is linked to a scanner for data and energy transfer by induction, microwaves or a capactitative coupling.

ADVANTAGE - The card assembly is wholly symmetrical within the chip card, to avoid any peaks of tension especially when bending.

L17 ANSWER 16 OF 29 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1994-317237 [39] WPIX
DNN N1994-249053
TI Card with l ctronic component and coil mfr. for us as bank card, access card - using compressibl base that is m lted as l ctronic compon nt and coil are pressed into it and setting.
IN DROZ, F
PI WO 9422111 A1 19940929 (199439)* EN 32p G06K019-077
FR 2703490 A1 19941007 (199440)
AU 9461535 A 19941011 (199504) G06K019-077
EP 641469 A1 19950308 (199514) FR 32p G06K019-077
CH 688696 A5 19980115 (199808) G06K019-077
EP 641469 B1 19981104 (199848) FR G06K019-077
R: AT BE CH DE DK ES FR GB IE IT LI LU MC NL PT SE
DE 69414331 E 19981210 (199904) G06K019-077
ES 2126098 T3 19990316 (199918) G06K019-077
PRAI CH 1993-804 19930317; FR 1993-3822 19930330
AB WO 9422111 A UPAB: 19941122
Th mfr. involves placing the electronic component (14) and the coil (16) on a base that is made of a material that is at least partly melted. The base (10) is melted by heating or some other application of energy, allowing the coil and the electronic component to sink into the base. As the base cools the coil and the electronic component are embedded in its surface.

The surface of the base is formed with a central hollow to accept the electronic component then has multiple ridges moving out to the edge. The ridges provide some compression and also points where the melting will commence.

ADVANTAGE - Faster production with reduced material requirement of contact-free smart cards used for bank cards or as identity cards.
Dwg.1/8

L17 ANSWER 17 OF 29 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD

AN 1994-293619 [36] WPIX
CR 1992-132352 [16]; 1997-525801 [48]; 1997-558042 [51]; 1999-069315 [06]; 1999-080544 [07]; 1999-560234 [44]; 2001-201283 [63]
DNN N1994-231038
TI S miconductor chip assembly with face-up mounting - has contacts on front surface and sheet-like flexible flap connected to backing element, each flap xtending upwardly alongside one edge of chip and each lead including flap portion.
IN DISTEFANO, T H; KHANDROS, I Y
PA (TESS-N) TESSERA INC
CYC 1
PI US 5347159 A 19940913 (199436)* 17p H01L023-02
ADT US 5347159 A CIP of US 1990-586758 19900924, CIP of US 1991-673020 19910321, US 1991-765928 19910924
FDT US 5347159 A CIP of US 5148265, CIP of US 5148266
PRAI US 1991-765928 19910924; US 1990-586758 19900924; US 1991-673020 19910321
IC ICM H01L023-02
ICS H01L023-12
AB US 5347159 A UPAB: 20010410
The semiconductor chip assembly includes a semiconductor chip having oppositely-facing front and rear surfaces, edges extending between the front and rear surfaces and contacts on the front surface. A generally sheetlike backing element (32) is placed under the chip. The backing element has a top surface facing toward the rear surface of the chip and a bottom surface facing away from the chip. The backing element has a central region aligned with the chip and has terminals thereon. At least some of the terminals are disposed on the bottom surface in the central region of the backing element.

The electrically conductive interconnect the contacts on the chip front surface and the terminals on the backing element bottom surface, these leads extending alongside the edges. The backing element and leads are flexible so that said terminals on the backing element are moveable with respect to the chip.

ADVANTAGE- Assembly need not be larger than chip itself.
Dwg.7/12

L17 ANSWER 18 OF 29 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD

AN 1993-251190 [32] WPIX
CR 1988-148699 [22]
DNN N1993-193499
TI Id ntification data card with embedded IC module - has electrical connection points located at centre of IC chip for reducing exerted m chanical loading forces.
DC T04
IN HAGHIRI, Y
PA (GESA) GAO GES AUTOMATION & ORG MBH; (GESA) GES AUTOMATION MBH
CYC 12
PI EP 554916 A2 19930811 (199332)* DE 12p G06K019-077
R: AT BE CH DE ES FR GB IT LI LU NL SE
EP 554916 A3 19940324 (199521)
EP 554916 B1 19970806 (199736) DE 10p G06K019-077
R: AT BE CH DE ES FR GB IT LI LU NL SE
DE 3752101 G 19970911 (199742) G06K019-077
ES 2106906 T3 19971116 (199801) G06K019-077
PRAI DE 1986-3639630 19861120
REP No-SR.Pub; 1.Jnl.Ref; EP 197438; EP 198376; JP 58155747
IC ICM G06K019-077
ICS B32B033-00; B44F001-12; G11C017-00; H01L021-92; H01L023-02; H01L023-50; H05K001-18; H05K003-30
AB EP 554916 A UPAB: 19931118
The data card has at least one incorporated IC module (3) coupled to corresponding conductor paths (4), for communication with an external circuit, via IC connection points (43) arranged in one or more groups.
The connection points (43) lie at the centre of the IC surface instead of along the edges of the IC chip, the ends of the conductor paths (4) projecting into a window in the surface of the data card into which the IC module (3) is fitted.
ADVANTAGE - Reduces mechanical forces exerted on IC module connection points.
Dwg.12/12
ABEQ EP 554916 B UPAB: 19970909
An IC module having integrated circuits, leads and terminals which are connected by suitable connecting techniques with further leads for communication with the circuit, characterised in that the terminals (43) of the module (3) are combined in at least one group and disposed in an inner region of the contact-bearing base of the module (3) so that the distance of each of the terminals from the center of the base is smaller than from the edge of the base.
Dwg.1/10

L17 ANSWER 19 OF 29 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD

AN 1992-269985 [33] WPIX
DNN N1992-206360
TI Data carrier with integrat d circuit for identity card - has depr ssi n in plastics card for receiving IC package which is covered with contact surface flush with card face.
IN BLOME, R
PA (ORGA-N) ORGA KARTENSYSTEME GMBH
PI DE 4126874 C 19920813 (199233)* 4p G06K019-077
EP 527437 A2 19930217 (199307) DE G06K019-07
EP 527437 A3 19931222 (199515) G06K019-077
EP 527437 B1 19961227 (199705) DE 5p G06K019-077
DE 59207752 G 19970206 (199711) G06K019-077
ES 2095368 T3 19970216 (199714) G06K019-077
PRAI DE 1991-4126874 19910814
AB DE 4126874 C UPAB: 19931006
The data carier is in the form of an identity card and is equipped with an integrated circuit. The carrier consists of a card body (1) which has been sprayed with plastics material and which has a recess (10), with a central depression or concavity (12). This concavity holds the integrated circuit package (20), fixed in position and secured with hot-sealing adhesive (3), the area being covered by a contact surface (22), flush with the external face of the medium.

The depression has a concave section and the recess a depth of about 1/4 to a 1/3 of the depth (DK) of the card. At the deepest point of the section there remains a thickness (DR) of about 1/4 to 1/3 of the thickness of the card.

ADVANTAGE - Thickness of card is only a little thicker than circuit board itself and there is greater protection for this. Stiffness of card is increased. (Dwg.1,2/3
1,2/3
ABEQ EP 527437 B UPAB: 19970129
A data carrier in the form of an identity card consisting of an injection moulded card (1) made from a plastic material which has a recess (10), with a depression (12) in the centre of the recess (2), into which is inserted a support, with a circuit module (20), in such a manner that the circuit module (20) is located in the depression (12) characterised in that the card (1) has a curved surface over the whole area of the depression and the recess (10) has a recess depth (TA) of about 1/4 to 1/3 the thickness of the card (DK) and the card (1) at the deepest point in the depression (12) has a residual thickness (DR) which corresponds to about 1/4 to 1/3 the thickness of the card.

L17 ANSWER 20 OF 29 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1992-132352 [16] WPIX CR 1994-293619 [36]; 1997-525801 [48]; 1997-558042 [51]; 1999-069315 [06]; 1999-080544 [07]; 1999-560234 [44]; 2001-201283 [63] DNN N1992-098714
TI Semiconductor chip assembly - has fl xible, sheet-lik elements with terminals which overli surface of chip.
IN DISTEFANO, T H; KHANDROS, I Y
PA (FIRS-N) 1ST ASSOC INC; (TESS-N) TESSERA INC; (ONES-N) 1ST ASSOC INC
PI WO 9205582 A 19920402 (199216)* EN 101p
AU 9187312 A 19920415 (199230) H01L023-12
US 5148265 A 19920915 (199240) 27p H01L023-12
US 5148266 A 19920915 (199240) 18p H01L023-12
EP 551382 A1 19930721 (199329) EN 2p H01L023-12
US 5258330 A 19931102 (199345) 26p H01L021-60
JP 06504408 W 19940519 (199424) H01L021-60
US 5346861 A 19940913 (199436) 19p H01L021-60
EP 551382 A4 19930901 (199527)
US 5682061 A 19971028 (199749) 18p H01L023-48
KR 9705709 B1 19970419 (199939) H01L023-12
CA 2091438 C 20000808 (200051) EN H01L023-50
EP 1111672 A2 20010627 (200137) EN H01L021-822
EP 551382 B1 20011219 (200206) EN H01L023-498
DE 69132880 E 20020131 (200216) H01L023-498
PRAI US 1991-673020 19910321; US 1990-586758 19900924; US 1992-864596 19920407; US 1993-19994 19930217; US 1992-865984 19920409; US 1994-278394 19940721; US 1995-461102 19950605
AB WO 9205582 A UPAB: 20020308
The semiconductor assembly includes a semiconductor chip having surfaces with contacts on at least one of the surfaces and a sheet (42) having terminals (48).

The sheet-like element and at least some of the terminals overlie the surface of the chip, The terminals are movable with respect to the chip and the assembly including a resilient layer for permitting movement of the terminals toward the chip.

ADVANTAGE - Improved method allowing compact assembly with compensation for thermal expansion.
ABEQ US 5148265 A UPAB: 19931006
The semiconductor chip has contacts on the periphery of its top surface and an interposer overlying the central portion of the top surface. Peripheral contact leads extend inwardly from the peripheral contacts to central terminals on the interposer. The terminals on the interposer may be connected to a substrate using techniques commonly used in surface mounting of electrical devices, such as solder bonding. The leads and pref. the interposer, are flexible so that the terminals are movable w.r.t. the contacts on the chip, to compensate for differential thermal expansion of the chip and substrate. The terminals on the interposer may be disposed in an area array having terminals disposed at equal spacings throughout the area of the interposer, thus providing distances between the terminals while accommodating all of the terminals in an area approximately the same size as the area of the chip itself. The interposer may be provided with a compliant layer disposed between the terminals and the chip to permit slight vertical movement of the terminals towards the chip during testing operation.

The chip and interposer assembly may be electrically tested prior to assembly to the substrate. A compliant layer disposed between the terminals and the chip permits slight vertical movement of the terminals towards the chip during testing operations in which the terminals on the interposer are engaged with an assembly of test probes.

ADVANTAGE - Entire assembly is compact.
ABEQ US 5148266 A UPAB: 19931006
The semiconductor chip assembly is mounted to contact pads in a compact area array. An interposer is disposed between the chip and the substrate. The contacts on the chip are connected to terminals on the interposer by flexible leads extending through apertures in the interposer. The terminals on the interposer in turn are bonded to the contact pads on the substrate.

Flexibility of the leads permits relativ m vement f th c ntacts on th chip relativ to th t rminals and the contact pads of the substrate and hence r liev s the str ss s caus d by differential th rmal xpansi n.

ADVANTAGE - Compact structur similar to that achieved through flip-chip bonding, but with markedly increased resistance to thermal cycling damage.
ABEQ EP 551382 A UPAB: 19931116
The semiconductor assembly includes a semiconductor chip having surfaces with contacts on at least one of the surfaces and a sheet (42) having terminals (48).

The sheet-like element and at least s m of the terminals verli the surfac f the chip, The terminals are movable with respect to the chip and th ass mbly including a resilient lay r f r p rmitting mov ment of the terminals toward the chip.

ADVANTAGE - Improved method all wing compact ass mbly with c mp nsati n f r thermal expansion.

ABEQ US 5258330 A UPAB: 19931220

The semiconductor chip has contacts on the periphery f its top surfac and has an intermediate dielectric layer overlying the central portion of the top surface. Peripheral contact leads extend inwardly from the peripheral contacts to central terminals on the dielectric sheet. The terminals on the dielectric may be connected to a substrate. The leads, and pref. the dielectric layer, are flexible so that the terminals are movable with respect to the contacts on the chip, to compensate for differential thermal expansion of the chip and substrate.

The terminals may be located in an area array with terminals positioned at equal spacings throughout the area of the dielectric, providing substantial distances between the terminals while accommodating all of the terminals in an area the same size as the chip area. The dielectric may have a compliant layer between the terminals and the chip to permit slight vertical movement of the terminals towards the chip during testing operations.

USE - E.g. RAM, muprocessor.

Dwg.3/16

ABEQ US 5346861 A UPAB: 19941102

The chip assembling method includes the steps of assembling a flexible sheetlike dielectric interposer formed separately from the chip and having first and second surfaces to the chip. A first surface of the interposer confronts a front surface of the chip, so that the first surface of the interposer bears on the front surface of the chip and a portion of the interposer overlies a contact pattern area encompassed by a pattern of contacts on the front surface of the chip.

The contacts on the chip are connected to terminals disposed on the second surface of the interposer within an area of the interposer overlying the contact pattern area by the flexible leads so that such leads extend between the contacts and terminals through apertures in the interposer and each such terminal is moveable with respect to the associated contact.

ADVANTAGE - Increased resistance to thermal cycling damage.

Dwg.2/16

ABEQ US 5682061 A UPAB: 19971211

A component for connecting a semiconductor chip to a substrate, said component being formed separately from the chip, said component comprising:

(a) a flexible sheetlike dielectric interposer having first and second surfaces and a plurality of apertures extending through the interposer from said first surface to said second surface;

(b) a plurality of terminals disposed on said second surface; and

(c) a flexible, electrically conductive lead extending from each said terminal to one of said apertures, each said lead having a contact end aligned with the associated aperture, said apertures and the contact ends of said leads being positioned in a pattern corresponding to a pattern of contacts on the chip, said interposer being compliant so that each terminal can be displaced in a direction perpendicular to th she tlik interposer and a region of the interposer beneath ach terminal can b compressed to accommodate such displacement.

Dwg.2,3/16

FS EPI

FA AB; GI

MC EPI: U11-D03A1; U11-D03A2; U11-D03A9; U11-E01X

L17 ANSWER 21 OF 29 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD

AN 1992-008762 [02] WPIX
DNN N1992-006726
TI Identify card with microprocessor - has open section with two referenc edges orientated to contact surfaces.
DC T04
IN BLOME, R; DEUTSCHMAN, B; FREISE, L; DEUTSCHMANN, B
PA (ORGA-N) ORGA KARTENSYST GMB; (ORGA-N) ORGA KARTENSYSTEME GMBH
CYC 14
PI DE 4040296 C 19920109 (199202)*
EP 495216 A2 19920722 (199230) DE 4p G06K019-07
EP 495216 A3 19930519 (199403)
EP 495216 B1 19961106 (199649) DE 5p G06K019-077
R: AT BE CH DE DK ES FR GB GR IT LI LU NL SE
DE 59108328 G 19961212 (199704) G06K019-077
ES 2094184 T3 19970116 (199710) G06K019-077
AB DE 4040296 C UPAB: 19931006
The identity card (SK) has a microprocessor (MP) is connected electrically to the contact surfaces (C1-C8) arranged relative to the reference edges (SKB,LKB) on the card according to a set standard.
There is a cut (FS) round the contact surfaces and the microprocessor in the card, with two reference edges (LB,QB) which are orientated w.r.t. the contact surfaces according to the standard. The cut has three sides. Between the ends of the cut there is a straight notch (K) so that the miniature microprocessor card can be detached.
ADVANTAGE - Can be mfd. easily to close tolerances in one piece.
1/1
ABEQ EP 495216 B UPAB: 19961205
Identity card with standard external dimensions, with a micro-processor (MP), which is electrically connected to contact surfaces (C1 to C8) and, together with them, is mounted off-centre on the identity card (SI), in accordance with a preset standard, in a rectangular, partially cut free chip card area (MK), distinguished by the fact that the chip card area takes the form of a miniature chip carrier (MK), which is cut completely free along three of its side edges (FS) and is connected to the part of the identity card surrounding the chip card area along its fourth side edge, through a slot which runs in a straight line (I), in such a way that the slot forms a hinged bridge for the miniature chip carrier (MK).
Dwg.1/1

L17 ANSWER 22 OF 29 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD

AN 1991-316935 [43] WPIX
CR 1990-209965 [27]; 1990-253622 [33]; 1990-267979 [35]; 1990-368343 [49]; 1991-036317 [05]; 1991-073168 [10]; 1991-280884 [38]; 1992-007531 [01]; 1992-088529 [11]; 1993-093536 [11]; 1995-089504 [12]; 1995-123120 [16]; 1996-097305 [10]; 1996-230181 [23]; 1996-251121 [25]; 1996-412339 [41]; 1997-033804 [03]; 1997-065021 [06]; 1997-225521 [20]; 1997-271400 [24]; 1997-319352 [29]; 1997-393070 [36]; 1997-525789 [48]; 1997-549243 [50]; 1998-332816 [29]; 1998-520721 [44]; 1998-520722 [44]; 1999-008899 [01]; 1999-131678 [11]; 1999-442814 [33]; 1999-610537 [52]; 2000-052351 [03]; 2000-136506 [11]; 2000-269746 [20]; 2000-586426 [48]; 2000-637517 [51]; 2000-671740 [47]; 2000-671998 [54]; 2001-373508 [29]
DNN N1991-242771
TI Hand-held wand for reading electronic tokens - has contact for pressing against periphery of electronic token with base portion in shape to fit finger.
DC T01 T04 T05
IN BOLAN, M L
PA (DALL-N) DALLAS SEMICOND
CYC 1
PI US 5025141 A 19910618 (199143)* 38p
ADT US 5025141 A US 1990-554271 19900718
PRAI US 1990-554271 19900718; US 1989-352598 19890515
IC G06K007-10
AB US 5025141 A UPAB: 20010716
The wand provides rapid contact to a two-terminal electronic token data module. The wand includes one contact which will make contact to the periphery of an electronic token which the wand is pressed against, and one contact which will make contact to the centre of the token. Preferably the wand includes a base portion which is shaped to be worn on the second joint of a user's finger.

This wand can be used for very rapid manual contacting of electronic tokens in various physical positions. This can be very advantageous in a variety of data collection/updating applications such as retail checkout, or tracking work-in-progress in a computer-assisted-manufacturing environment.

USE - For interface to compact electronic modules. For inventory control, machinery maintain records, retail tagging and alike.

Dwg.1a/20
FS EPI
FA AB; GI
MC EPI: T01-H01B; T01-J07; T04-K; T05-G02

L17 ANSWER 23 OF 29 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD

AN 1990-253622 [33] WPIX
CR 1990-209965 [27]; 1990-267979 [35]; 1990-368343 [49]; 1991-036317 [05];
DNN N1990-196530
TI Hand-held wand for reading electronic tokens - includes contact for periphery of token which wand is pressed against and further contact for centre of token.
DC T04
IN BOLAN, M L
PA (DALL-N) DALLAS SEMICONDUCTO
CYC 15
PI US 4945217 A 19900731 (199033)* 36p
WO 9014626 A 19901129 (199050)
RW: AT BE CH DE DK ES GB IT LU NL SE

W: CA JP KR US
US 4982371 A 19910101 (199104)
ADT US 4945217 A US 1989-352598 19890515
PRAI US 1989-352598 19890515; US 1989-351759 19890515; US 1989-351760 19890515; US 1989-351997 19890515; US 1989-351998 19890515; US 1989-351999 19890515; US 1989-352142 19890515; US 1989-352581 19890515; US 1989-352596 19890515
REP US 4409471; US 4584672; US 4695914; US 4710902; US 4717817; US 4748320; US 4780707; US 4791285; US 4795898; US 4798322; US 4820910; US 4868409; US 4873672
IC G06F001-18; G06F003-00; G06F013-00; G06K007-10
AB US 4945217 A UPAB: 20010716

A base is shaped to be firmly supported by the hand of a user. A surface is positioned so that a user can bring the surface into contact with the token to be contacted. The surface includes a recess which is shaped to mate with the token to be contacted. The inner perimeter of the recess is bordered by a conductive ring of conductive material.

The ring of conductive material is connected to a first lead wire. An additional exposed contact is positioned in the middle of the recess, the additional contact being connected to a second lead wire. The first and second lead wires can be connected to a host computer to provide a data interface to randomly positioned tokens, as quickly as a user can make contact between the recess and the tokens.

USE - Wand for rapidly manually contacting two-terminal thin round electronic token data modules.

Dwg.1A/20

L17 ANSWER 24 OF 29 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD

AN 1989-350091 [48] WPIX
DNN N1989-266310
TI Fabrication of electronic memory card - uses lead frame fabricated from metal strip to provide connection between semiconductor chip and external contacts.
DC T04 U11
IN ROSE, R
PA (SLMB) SCHLUMBERGER IND SA
CYC 11
PI EP 344058 A 19891129 (198948)* FR 10p
R: BE CH DE ES GB IT LI NL SE
FR 2632100 A 19891201 (199004)
US 5005282 A 19910409 (199117)
EP 344058 B1 19931103 (199344) FR 12p G06K019-06
R: BE CH DE ES GB IT LI NL SE
DE 68910385 E 19931209 (199350) G06K019-06
ES 2047691 T3 19940301 (199413) G06K019-06
EP 344058 B2 19970813 (199737) FR 10p G06K019-06
R: BE CH DE ES GB IT LI NL SE
ADT EP 344058 A EP 1989-401407 19890524; US 5005282 A US 1989-356357 19890524; EP 344058 B1 EP 1989-401407 19890524; DE 68910385 E DE 1989-610385 19890524, EP 1989-401407 19890524; ES 2047691 T3 EP 1989-401407 19890524; EP 344058 B2 EP 1989-401407 19890524
FDT DE 68910385 E Based on EP 344058; ES 2047691 T3 Based on EP 344058
PRAI FR 1988-6921 19880525
REP EP 197438; EP 207853; EP 254640; FR 2584862; DE 3338597
IC G06K019-06; H01R043-00
AB EP 344058 A UPAB: 19930923
The fabrication of the integrated circuit card commences with a cutting and forming of a metallic strip (10) to define multiple groups of conductors arranged at the centre region to correspond to the contact pattern of the semi-conductor chip carried in the card and at the outer edges to correspond to the configuration of the contacts which are positioned on the face of the card to allow its electrical connection to a reader.

An insulating strip (50) is fixed to the external face (10a) of the strip so it leaves exposed the external contact pads (20a to 34a) for the electronic module. In the following stages the semiconductor chip is fixed on the internal face of the lead frame and the lead frame separated from the metal strip.

ADVANTAGE - Simplifies construction of integrated circuit cards by use of lead frame.

2/7
ABEQ US 5005282 A UPAB: 19930923
In order to achieve this object. The method involves provides a lead-frame defining various conductor elements some of which form external electrical contact tabs for the card. Electrically insulating reinforcement material is fixed on the frame in such a manner that the material covers neither th external tabs disposed on an outside face of the frame nor connection zones disposed on an inside face of the lead-frame.

A semiconductor chip is fixed on the sinide face f th lead-frame and the terminals of the chip are electrically connected to the connection zones. The electronic module is fixed n the b dy of th card.

USE - For making electronic module, which uses lead-frame, and which facilitates installation of electronic module in card body.
ABEQ EP 344058 B UPAB: 19970915
Method of making a plurality of electronic memory cards each comprising an

electronic module (70) mounted on a card body (72) and comprising th following steps: a) a strip (10) of conducting material is provided and a plurality of l ad-frames (A,B,C) is formed therein, each lead-frame comprising a plurality of conductor elements (20 to 34) separat d from n another but mechanically connected to th remainder f said strip, at least one portion of each conductor element constituting an external electrical contact tab (20b to 34b); b) an insulating reinforcement material (50,52,54) is fixed on said conducting strip in such a manner that said reinforcement material covers a portion of each conductor element in each lead-frame, but covers neither said external contact tabs of said lead-frames disposed on an outside face (10a) of said conducting strip, nor the connection zones (20a to 34a) of each conductor element disposed on the inside face (10b) of said strip; c) a semiconductor chip (56) is fixed on the inside face of each lead-frame and the terminals of said chip are fixed to the connection zones of said frame; d) each lead-frame is separated from the remainder of the strip, thereby obtaining electronic modules (70); e) each electronic module obtained in this way is fixed on a card body (72); and at step b) in order to fix said insulating reinforcement material, a first strip (50) of insulating reinforcement material is fixed on the outside face of the conducting strip so as to leave said external electrical contact tabs uncovered on either side of said insulating strip, and second and third strips (52,54) of insulating reinforcement material are fixed on the inside face of the conducting strip so as to leave said connection zones and semiconductor chip fixing zones uncovered by said insulating material between said second and third strips.

Dwg.6/7

FS EPI

FA AB; GI

MC EPI: T04-K; U11-D01A7; U11-D03A1

L17 ANSWER 25 OF 29 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD

AN 1989-341791 [47] WPIX
DNN N1989-260266
TI Flexible printed circuits for use in credit cards - has substrate holding chip in recess at one end, with contacts at ther, and carried undulating conductors between them.
DC P76 T04 U11 V04
IN CHAMPAGNE, D; LE, LOCH A; LEFORT, O; LELOCH, A
PA (SELA) BULL CP8
CYC 16
PI EP 343030 A 19891123 (198947)* FR 8p
R: AT BE CH DE ES FR GB IT LI NL SE
FR 2631200 A 19891110 (199001)
AU 8934027 A 19891109 (199008)
JP 02017690 A 19900122 (199009)
US 4980802 A 19901225 (199103)
EP 343030 B1 19920812 (199233) FR 9p H05K001-00
R: AT BE CH DE ES FR GB IT LI NL SE
DE 68902421 E 19920917 (199239) H05K001-00
ES 2034676 T3 19930401 (199323) H05K001-00
CA 1319430 C 19930622 (199330) FR H05K001-00
KR 162247 B1 19990115 (200036) H05K001-00
ADT EP 343030 A EP 1989-401213 19890428; JP 02017690 A JP 1989-115954 19890509; US 4980802 A US 1989-346134 19890502; EP 343030 B1 EP 1989-401213 19890428; DE 68902421 E DE 1989-602421 19890428, EP 1989-401213 19890428; ES 2034676 T3 EP 1989-401213 19890428; CA 1319430 C CA 1989-599143 19890509; KR 162247 B1 KR 1989-6251 19890509
FDT DE 68902421 E Based on EP 343030; ES 2034676 T3 Based on EP 343030
PRAI FR 1988-6201 19880509
REP EP 207853; FR 87716
IC ICM H05K001-00
ICS B42D015-02; G06K019-06; G06K019-07; H01L023-50
AB EP 343030 A UPAB: 19930923
An integrated circuit chip (12) fits into a recess or opening (17) at one end of a flexible substrate (13) and is soldered to contact zones (16) which this carries on either side of its longitudinal axis (A). Further contact (15) zones similarly disposed at the other end, provide connection points for a reader. The contacts are interconnected by metallisations (14) forming conductors on the substrate surface.

Leaving each zone at right angles to the longitudinal axis of this printed circuit, these follow an undulating but parallel path (14c) in between. The complete substrate is installed in a recess at one end of a credit card with its reader contacts centred on the latter's longitudinal axis. A protective film is deposited overall, with perforations for connection with the reader.

ADVANTAGE - Design of printed circuit ensures that in-service flexing of card proper is unlikely to damage conductors or chip within.

2/5
ABEQ DE 68902421 E UPAB: 19930923
An integrated circuit chip (12) fits into a recess or opening (17) at one end of a flexible substrate (13) and is soldered to contact zones (16) which this carries on either side of its longitudinal axis (A). Further contact (15) zones similarly disposed at the other end, provide c nnecti n points for a reader. The contacts are interconnected by metallisati ns (14) forming conductors on the substrate surface.

Leaving each zone at right angles to th longitudinal axis of this printed circuit, these follow an undulating but parallel path (14c) in between. The complete substrate is installed in a recess at n end f a credit card with its reader contacts centred on the latter's

longitudinal axis. A protective film is deposited overall, with perforations for connection with the reader.

ADVANTAGE - Design of printed circuit ensures that in-service flexing of card proper is unlikely to damage conductors or chip within.

ABEQ EP 343030 B UPAB: 19930923

A flexible printed circuit (10) provided with conductors (14) c nnected to contacts (15) distributed over a first zone of the circuit and intended for a connection made in a second zone of the circuit remote from the first, said conductors (14) leaving the respective contacts (15) substantially perpendicular to the axis (A) of the printed circuit joining the two zones, characterised in that said conductors then form loops or meanderings relative to this axis as far as the second zone.

1/5

ABEQ US 4980802 A UPAB: 19930923

The printed circuit comprises conductive contacts and conductive leads which are each connected to a respective contact at a first zone of the circuit, and which are each connected to a respective second contact in a second zone. The second zone of the circuit is located at a distance from the first zone, each lead having a member defining end portions that extend to a predetermined point from the respective contact in each of the two zones in a direction perpendicular to an axis of the printed circuit defined as that axis extending between the two zones.

Each lead also includes a member defining a middle portion contiguous with each of the end portions at the predetermined point, the middle portion having at least one bend or loop.

USE - For credit card.

FS EPI GMPI

FA AB; GI

MC EPI: T04-K; U11-D01A7; V04-Q02

L67 ANSWER 3 OF 8 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2000-456292 [40] WPIX
DNN N2000-340316
TI Non contact **integrated circuit** part manufacturing apparatus **punches** COB chip and solders it with **antenna coil** to form a module which is affixed on core sheet after removing extra wires from it.
DC T04
PA (TOHM) TOKIN CORP
CYC 1
PI JP 2000163545 A 20000616 (200040)* 6p G06K019-07
ADT JP 2000163545 A JP 1998-352147 19981125
PRAI JP 1998-352147 19981125
IC ICM G06K019-07
ICS G06K019-077
AB JP2000163545 A UPAB: 20000823
NOVELTY - The **punching** machine (15) pierces the COB chip from a **coil strip**, with a **punching** die (16). The winding machine (22) forms an **antenna coil** and supplies it to the soldering machine (29) that solders the **antenna coil** and the COB chip to form a module. The extra wires of the module are removed in the extra wire removal machine (36) and the module is affixed on a core sheet (7) by the pasting machine (38).

DETAILED DESCRIPTION - A transfer mechanism (42) transfers the carrier jig loaded with module, between COB **punching** machine, winding machine, soldering machine, extra wire removal machine and module pasting machine.

USE - For manufacturing non contact **integrated circuit** (**IC**) card.

ADVANTAGE - The **IC** card is manufactured automatically.

DESCRIPTION OF DRAWING(S) - The figure shows the entire component of **IC** card manufacturing apparatus.

Core sheet 7
Punching machine 15
punching die 16
Winding machine 22
Soldering machine 29
Removal machine 36
Pasting machine 38
Transfer mechanism 42
Dwg.1/5

L67 ANSWER 8 OF 8 HCAPLUS COPYRIGHT 2002 ACS
AN 1999:668153 HCAPLUS
DN 131:280250
TI Foils as substrate for **integrated circuits**
IN Sauer, Veronika; Lach, Friedrich; Bauer, Alfred; Hartmann, Horst; Kolodzei, Guenter; Slager, Ben
PA Philips Patentverwaltung G.m.b.H., Germany; W. C. Heraeus G.m.b.H. und Co. K.-G.; NedCard B.V.
SO Ger. Offen., 8 pp.
CODEN: GWXXBX
DT Patent
LA German
IC ICM H05K001-00
CC 76-3 (Electric Phenomena)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19816066	A1	19991014	DE 1998-19816066	19980409

AB The chips for chip-cards are usually manufd. on film **strips** made from a synthetic material and conducting **strip** patterns and are connected with these patterns by means of connecting wires. By using a film **strip** contg. periodic conducting patterns, an automatic line-up is possible. It is desirable for chips that can be manufd. with contacts or without contacts to a **coil**, to have shaped conducting circuits on both sides of the film **strips**. However, accordingly the chips become very inflexible and cannot be manufd. with customary automatic procedures. According to the invention,it is proposed that addnl. disconnections in the form of perforations be provided in the metal foils which are used to **punch** out the conducting network,thereby diminishing the cross-section of the metal foils perpendicular to longitudinal direction of the film at short distances. Accordingly, the film **strips** become more flexible and can be used in customary automatic manufg. machines.
ST foil substrate **integrated circuit** semiconductor

L69 ANSWER 2 OF 24 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2001-512803 [56] WPIX
CR 2001-353547 [35]; 2001-388699 [38]; 2001-488157 [45]
DNN N2001-379659
TI Non contact stored value card universal interface module using **embedded** twin **loop antenna** with **loops** 180 degrees out of phase with each other.
DC T04 T05 W02
IN HALPERN, J W
PA (HALP-I) HALPERN J W
CYC 1
PI US 6173897 B1 20010116 (200156)* 22p G06K019-06
ADT US 6173897 B1 US 1998-122672 19980727
PRAI US 1998-122672 19980727
IC ICM G06K019-06
AB US 6173897 B UPAB: 20011001
NOVELTY - Twin **loop coils** (6,7) with capacitive loads (3,4) and common winding (8) are made from electrical conductor **strip**. They are deposited on thin laminate card substrate and connected at common winding to mounted integrated data processing circuit chip (**IC**). Connection is made where average load resistance is impedance matched to **antenna** module at **IC** operating frequency with **coils** being driven 180 degrees out of phase with each other.

DETAILED DESCRIPTION - INDEPENDENT CLAIM is also included for an energy transfer system.

USE - Non contact **inductively** coupled stored value cards for automatic fare assessment and collection installations on railways and buses. Other possible applications include supermarket checkouts and hole in the wall cash dispensers etc.

ADVANTAGE - Provides non-contact energy and data transfer ranging from close proximity (1-60mm) through medium (20-150mm) to a distance of up to 10 meters.

DESCRIPTION OF DRAWING(S) - Circuit diagram of card **embedded antenna** module.

VHF drive unit 1
Capacitive load 3,4
Coupling capacitor 5
Twin **loop coils** 6,7
Common winding 8
Dwg.1/29
FS EPI
FA AB; GI
MC EPI: T04-K01; T05-H02C5C; T05-H05C; W02-B01A; W02-B05B8; W02-B08C3;

L69 ANSWER 5 OF 24 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2000-628656 [61] WPIX
DNN N2000-479977
TI **Integrated circuit** with **inductive** element for use as voltage-controlled oscillator, comprising active zone containing resistive, capacitive and semiconductor elements, screened from **inductor**.
IN CERCELARU, S; JOVENIN, F
PA (PHIG) KONINK PHILIPS ELECTRONICS NV; (PHIG) PHILIPS GLOEILAMPENFAB NV
PI CN 1259769 A 20000712 (200061)* H01L027-00
JP 2000208704 A 20000728 (200061) 7p H01L027-04
EP 1017102 A1 20000705 (200063)B FR 13p H01L027-06
SG 75997 A1 20001024 (200064) H01L027-06
KR 2000048416 A 20000725 (200116) H01L027-04
TW 441086 A 20010616 (200203) H01L027-06
PRAI FR 1998-16569 19981229
AB EP 1017102 A UPAB: 20001205 ABEQ treated as Basic
NOVELTY - The **integrated circuit** comprises an **inductive** element (4), an active zone (5) which can contain resistive, capacitive and semiconductor elements partially superimposed with the **inductive** element, and a screen (6) for isolating the active zone from the electromagnetic field of the **inductive** element. The screen is placed between the **inductive** element and the active zone, and is in the form of an open circuit.

DETAILED DESCRIPTION - The screen is in the form of a sheet made of low-resistivity material and placed perpendicular to the direction of the magnetic field vector of the **inductive element**, and comprises alternating **strips** and slits perpendicular to the direction of electric current induced in the sheet. The **strips** are joined to a frame which is not closed, e.g. has a slit, to prevent the circulation of induced current in the frame. The screen comprises wells made of low-resistivity material with walls totally surrounding the **inductive** elements, the walls having slits extending in all height. The sheet and the wells are connected to a reference potential, e.g. ground. The **integrated circuit** is made by a superposition of layers, each of a low-resistivity material, the walls of wells are made of sets of interconnected **strips**, cutout in layer around perimeter determined by the area of the **inductive** element. In second embodiment, the **integrated circuit** comprises two **inductive** elements connected between the poles of a voltage supply and a reference potential; each **inductive** element is in the form of a spiral, symmetric and with opposite direction of winding, where parts directly opposite are further away from the pole of voltage supply. The oscillator in the form of the **integrated circuit** delivers an output signal of frequency dependent on the value of the tuning voltage, and the active zone contains at least one varicap diode connected to the **inductive** element. A claim is also included for a radio receiver comprising a system of **antenna** and filter for the reception of signals at radio frequency (RF), a local oscillator with tunable frequency in the form of the proposed **integrated circuit**, a mixer delivering a signal of intermediate frequency (IF) equal to the difference between the radio frequency (RF) and the local oscillator frequency (FLO), and a processor unit.

USE - In **integrated circuits** used as voltage-controlled oscillators, in connection with mixers and filters, for use in radio-communication receivers.

ADVANTAGE - Possible compact **integrated circuit** because of electromagnetic interaction reduced by screening, and also higher quality factor.

DESCRIPTION OF DRAWING(S) - The drawing is across-sectional view of the **integrated circuit**.

Substrate 2
Layers of low-resistivity material 3, M1, M2, M3, M4
Inductive element 4
Active zone 5
Screen 6

AB CN 1259769 A UPAB: 20001209
NOVELTY - The **integrated circuit** comprises an **inductive** element (4), an active zone (5) which can contain resistive, capacitive and semiconductor elements partially superimposed with the **inductive** element, and a screen (6) for isolating the active zone from the electromagnetic field of the **inductive** element. The screen is placed between the **inductive** element and the active zone, and is in the form of an open circuit.

DETAILED DESCRIPTION - The screen is in the form of a sheet made of low-resistivity material and placed perpendicular to the direction of the magnetic field vector of the **inductive element**, and comprises alternating **strips** and slits perpendicular to the direction of electric current induced in the sheet. The **strips** are joined to a frame which is not closed, e.g. has a slit, to prevent the circulation of induced current in the frame. The screen comprises wells made of low-resistivity material with walls totally surrounding the **inductive** elements, the walls having slits extending in all height. The sheet and the wells are connected to a reference potential, e.g. ground. The **integrated circuit** is made by a superposition of layers, each of a low-resistivity material, the walls of wells are made of sets of interconnected **strips**, cutout in layer around perimeter determined by the area of the **inductive** element. In second embodiment, the **integrated circuit** comprises two **inductive** elements connected between the poles of a voltage supply and a reference potential; each **inductive** element is in the form of a spiral, symmetric and with opposite direction of winding, where parts directly opposite are further away from the pole of voltage supply. The oscillator in the form of the **integrated circuit** delivers an output signal of frequency dependent on the value of the tuning voltage, and the active zone contains at least one varicap diode connected to the **inductive** element. A claim is also included for a radio receiver comprising a system of **antenna** and filter for the reception of signals at radio frequency (RF), a local oscillator with tunable frequency in the form of the proposed **integrated circuit**, a mixer delivering a signal of intermediate frequency (IF) equal to the difference between the radio frequency (RF) and the local oscillator frequency (FLO), and a processor unit.

USE - In **integrated circuits** used as voltage-controlled oscillators, in connection with mixers and filters, for use in radio-communication receivers.

ADVANTAGE - Possible compact **integrated circuit** because of electromagnetic interaction reduced by screening, and also higher quality factor.

DESCRIPTION OF DRAWING(S) - The drawing is across-sectional view of the **integrated circuit**.

Substrate 2
Layers of low-resistivity material 3, M1, M2, M3, M4
Inductive element 4
Active zone 5
Screen 6
Dwg.1/6

L69 ANSWER 9 OF 24 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1996-041814 [05] WPIX
DNN N1996-035059
TI Manufacturing process for data cards with embedded **IC** modules - has location holes formed as reference for positioning **IC** modules in prepared holes and then covered in sequence of continuous operations.
DC T04 T05
IN HAGHIRI, Y; HOHMANN, A; HOPPE, J; HAGHIRI-TEHRANI, Y
PA (GIES-N) GIESECKE & DEVRIENT GMBH
CYC 19
PI EP 689164 A2 19951227 (199605)* DE 13p G06K019-077
R: AT BE CH DE DK ES FR GB GR IE IT LI LU MC NL PT SE
DE 4421607 A1 19960104 (199606) 12p B42D015-10
JP 08052969 A 19960227 (199618) 10p B42D015-10
EP 689164 A3 19970806 (199743) G06K019-077
US 5745988 A 19980505 (199825) 11p H05K003-30
US 5943769 A 19990831 (199942) H05K003-02
ADT EP 689164 A2 EP 1995-109534 19950620; DE 4421607 A1 DE 1994-4421607 19940621; JP 08052969 A JP 1995-178204 19950621; EP 689164 A3 EP 1995-109534 19950620; US 5745988 A US 1995-492564 19950620; US 5943769 A Div ex US 1995-492564 19950620, US 1998-7762 19980115
FDT US 5943769 A Div ex US 5745988
PRAI DE 1994-4421607 19940621
REP No-SR.Pub; EP 376062; EP 418759; US 4863546
IC ICM B42D015-10; G06K019-077; H05K003-02; H05K003-30
ICS G06K019-00
AB EP 689164 A UPAB: 19960205
Data cards of the type used as bank, credit, telephone or insurance cards are produced in a continuous sequential process. The cards have embedded **IC** circuits with **inductive** communication **coils** that are located at specific positions.

The process involves feeding **strip material** over rollers with location holes (25) defining positions of the cards on the carrier. Subsequent processes have the electronic modules (3) transferred from foil into a prepared aperture (33) formed on the card. Further operations include the winding of planar **coils** at the locations on the card. Protective resin material is overlaid in other stations (61,63,65).

USE/ADVANTAGE - Efficient manufacture of data cards with accurately positioned **IC** modules.

Dwg.1/7
FS EPI

L69 ANSWER 10 OF 24 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1994-326188 [41] WPIX
DNN N1994-256230
TI **Integrated circuit elements** having variable electrical characteristics partic. at microwave frequencies - has at least one micro-cavity with limited clearance to moving conducting element linking to substrate and actuating device.
AW MMIC.
DC U14 W02
IN CACHIER, G
PA (CSFC) THOMSON CSF
CYC 2
PI EP 621652 A1 19941026 (199441)* FR 10p H01P005-04
FR 2704357 A1 19941028 (199443) H01L029-68
US 5543765 A 19960806 (199637) 9p H01P005-04
ADT EP 621652 A1 EP 1994-400830 19940415; FR 2704357 A1 FR 1993-4628 19930420; US 5543765 A US 1994-230239 19940420
PRAI FR 1993-4628 19930420
REP 01Jnl.Ref; EP 516166; EP 517232; US 3166723
IC ICM H01L029-68; H01P005-04
ICS H01P001-00; H01P001-18
AB EP 621652 A UPAB: 19941206
The **integrated circuit** is formed by multilayer deposition onto a substrate (14). A cavity (16) is formed below the moving part (17,18) which may be an electrical conductor or an insulator partially covered by conducting material and which is connected to a DC supply.

The moving element may be ferromagnetic and driven by an **inductive** element on the substrate or it may comprise at least one metal band deposited on a flexible element and operated similar to a bimetallic **strip**. A variable capacitor may be formed by a flexible cantilever beam or by a rigid slab which is freely movable. A variable track length may be formed by a flexible beam between two ends.

USE/ADVANTAGE - E.g. for capacitance, impedance, track length and line, **antenna** elements. Small size, negligible losses, low power consumption.

Dwg.3/7
ABEQ US 5543765 A UPAB: 19960918
A microwave circuit disposed on a substrate having several insulating and conductive layers, wherein one of the insulating layers has metallizations defining microwave circuits, at least one cavity is disposed in one of the layers, comprising:

at least one moving element defined by a portion of one of said layers, said moving element comprising an electrically conductive material or an insulator material that is at least partially covered with electrically conductive material disposed in said at least one cavity, and is interconnected with said microwave circuit, and

an electrical device operatively coupled to said moving element for the actuation of the moving element.

Dwg.3/7
FS EPI
FA AB; GI

L69 ANSWER 11 OF 24 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1993-386782 [48] WPIX
DNN N1993-298652
TI **IC** card data carrier - has **induction strip** on or in plastic carrier film and meander-shaped **induction loop** film in magnetisable material.
DC T04
IN KNAB, G
PA (NEUT-N) NEUTRON ELECTRONIC COMPUTER GMBH; (KNAB-I) KNAB G
CYC 21
PI WO 9323826 A1 19931125 (199348)* DE 36p G06K019-077
RW: AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE
W: AU CA JP US
DE 4221305 A1 19931125 (199348) 9p G06K019-06
AU 9343139 A 19931213 (199413) G06K019-077
EP 596093 A1 19940511 (199419) DE 36p G06K019-077
R: CH DE FR GB LI NL
AT 9201030 A 19950615 (199529) G11B025-04
AT 400647 B 19951215 (199605) G11B025-04
AB WO 9323826 A UPAB: 19940120
The card-shaped data carrier has an **induction strip** (4) in the plane of the card and an **induction loop** (1) in a magnetisable **material**. The **strip** and/or **loop** ar in the form of a film.
The film from which the **induction loop** is made is meander-shaped. Sections (3) of the magnetisable material arranged in the spaces between the windings of the **loop** form a multiply divided film lying in the plane of the **induction loop**. The **induction strip** is **mounted** on or in a plastic carrier film.
USE/ADVANTAGE - For storing and transferring data. The **induction strip** is simple to manufacture and can be read with conventional equipment. No through contacts are required.
Dwg.2/36
ABEQ DE 4221305 A UPAB: 19940120
The card-shaped data carrier has an **induction strip** (4) in the plane of the card and an **induction loop** (1) in a magnetisable **material**. The **strip** and/or **loop** ar in the form of a film.
The film from which the **induction loop** is made is meander-shaped. Sections (3) of the magnetisable material arranged in the spaces between the windings of the **loop** form a multiply divided film lying in the plane of the **induction loop**. The **induction strip** is **mounted** on or in a plastic carrier film.
USE/ADVANTAGE - For storing and transferring data. The **induction strip** is simple to manufacture and can be read with conventional equipment. No through contacts are required.
Dwg.2/36
FS EPI

L69 ANSWER 13 OF 24 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1989-292726 [40] WPIX
DNN N1989-223319
TI Mass produced planar **inductive** element for **IC** - has deformable substrate so conductive **strip** is oriented to form **coil** structure for use as **inductive** element.
DC P85 T04 V02 V04 W02 W05
IN BROOKS, D R
PA (MAGE-N) MAGELLAN CORP AUST
CYC 32
PI WO 8908973 A 19890921 (198940)* EN 30p
RW: AT BE CH DE FR GB IT LU NL OA SE
W: AT AU BB BG BR CH DE DK FI GB HU JP KP KR LK LU MC MG MW NL NO RO SD SE SU US
AU 8931998 A 19891005 (199001)
ZA 8901820 A 19901128 (199101)
EP 408588 A 19910123 (199104)
R: AT BE CH DE FR GB IT LI LU NL SE
JP 03504062 W 19910905 (199142)
EP 408588 A4 19910821 (199518)
AB WO 8908973 A UPAB: 19930923
The **inductive** element comprises a deformable substrate supporting a serpentine conducting **strip**, configured in the form of a **coil**-like structure. Thickness of material, width of traces and number of layers are highly interdependent and are optimised for a given application.

An **inductive** element required, for example, in a credit-card sized transponder operating at 132kHz utilises 18.5um copper foil on a 1.5um polyester film, permitting 38 layers in the available thickness of 0.76mm. **Coil** conductors may be 2mm wide, arranged as a square of 50 mm side and providing an **inductance** of 62uH.

ADVANTAGE - Improved Q-factor.

2/9

L69 ANSWER 14 OF 24 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1988-365390 [51] WPIX
TI Magnetic field generator for **IC** card magnetic reader - has **coil** formed on thin magnetic **strip bonded** on non-magnetic substrate NoAbstract Dwg 1/2.
DC P76 T01 T04 V02
PA (TOKE) TOSHIBA KK
CYC 1
PI JP 63276206 A 19881114 (198851)* 4p
ADT JP 63276206 A JP 1987-112118 19870508
PRAI JP 1987-112118 19870508
IC B42D015-02; G06K019-00; G11B005-31; H01F007-20
FS EPI GMPI
FA NOAB; GI
MC EPI: T01-H01B; T04-K; V02-F01

L69 ANSWER 15 OF 24 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1988-049757 [07] WPIX
DNN N1988-037714
TI Credit card wallet with missing card reminder - has foil chip contacting metallic **strips** to close alarm circuit to increase positive voltage through photoresistor and start sounding **IC**.
DC W05 X27
PA (LINW-I) LIN W T
CYC 1
PI US 4721948 A 19880126 (198807)* 5p
ADT US 4721948 A US 1987-30088 19870326
PRAI US 1987-30088 19870326
IC G08B007-00; G08B021-00
AB US 4721948 A UPAB: 19930923
A wallet includes a pair of leaves foldable upon each other having two longitudinal metallic **strips adhered** on a magnet **strip** formed on a right leaf of the two leaves. A number of card bags are adapted for inserting credit cards, lift cards, etc. Each bag has a lower opening and a metallic foil chip backed with a ferrous chip corresponding to the lower opening to be operatively contacted with two metallic **strips** formed on the right leaf adapted to complete an alarm circuit.

The alarm circuit has a light-emitting diode (LED), a sensitive photoresistor and an inert photoresistor subject to light exposure from the LED when closing the two leaves. If any card is not inserted in the bag, the **coil** chip will be magnetically driven to contact the two metallic **strips** to close the alarm circuit and light LED to increase a positive voltage through the inert photoresistor to start the sounding **IC** to remind the wallet owner of his or her possible missing of a card.

5/5
FS EPI
FA AB; GI
MC EPI: W05-A04; W05-B01B; X27-A02

L69 ANSWER 23 OF 24 JAPIO COPYRIGHT 2002 JPO
AN 1998-092868 JAPIO
TI HIGH FREQUENCY SEMICONDUCTOR DEVICE
IN HIGUCHI KAZUTO; MIYAGI TAKESHI; SAITO MASAYUKI; IZEKI YUJI; HANAWA TAKESHI
PA TOSHIBA CORP, JP (CO 000307)
PI JP 10092868 A 19980410 Heisei
AI JP1996-247406 (JP08247406 Heisei) 19960919
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 98, No. 4
IC ICM (6) H01L021-60
ICS (6) H01L021-60
AB PURPOSE: TO BE SOLVED:To attain cheap and good **antenna** characteristics, without using complicated manufacturing process by providing partly removed ground conductors on a first surface and microstrip **antenna** on a second surface.
CONSTITUTION: device comprises a semiconductor chip 6 and TAB film carrier tape 2 with a microstrip **antenna**. The chip 6 has an r-f **integrated circuit** on the surface of a GaAs substrate. This circuit has **strip** conductor lines and circuit **elements**, including semiconductor elements, capacitors and **inductors**. The tape 2 uses a double layer wiring tape having circular patches 1 of radiating conductor on one surface and ground conductor plane 9 on the other surface. The gap 8 is located on the top face of a microstrip line 13 to be a feed line on the chip 6 and the feed line is electromagnetically coupled with the conductor 1 through the gap 8.

L71 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:422676 HCAPLUS
DN 133:127872
TI Next generation **integral** passives: materials, processes, and integration of resistors and capacitors on PWB substrates
AU Bhattacharya, Swapan K.; Tummala, Rao R.
CS Packaging Research Center, School of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA, 30332-0560, USA
SO Journal of Materials Science: Materials in Electronics (2000), 11(3), 253-268
CODEN: JSMEEV; ISSN: 0957-4522
PB Kluwer Academic Publishers
DT Journal; General Review
LA English
CC 76-0 (Electric Phenomena)
AB A review with 103 refs. Integral passives are becoming increasingly important in realizing next generation electronics industry needs through gradual replacement of discretes. The need for integral passives emerges from the increasing consumer demand for product miniaturization thus requiring components to be smaller and packaging to be space efficient. The feasibility of integration of polymer/ceramic thin film (.apprx. 5 .mu.m thick) capacitors (C) with other passive components such as resistors (R) and **inductors** (L) has been discussed. An integrated RC network requiring relatively large capacitance and resistance is selected as a model for co-integration of R and C components using low temp. PWB compatible fabrication processes. This test vehicle is a subset of a large elec. circuit of a functional medical device. To produce higher capacitance d. and reduce in-plane device area, **multi-layer** (currently two-layer) capacitors are stacked in the thickness direction. A com. available Ohmega-Ply resistor/**conductor** material is selected for integral resistors. Resistors were fabricated using a multi-step lithog. process using 2 sep. masks. Bottom Cu electrodes for capacitors were also defined during the resistor fabrication process. Photo-definable epoxies filled with a high permittivity ceramic powder were used for fabrication of thin film capacitors. Epoxy and ceramic powders were mixed in the required proportion and blended using a high shear app. The coating soln. was homogenized in a roll miller for 3-5 days prior to casting to prevent settling of the higher d. ceramic particles. Capacitors were fabricated by spin-coating on the sub-etched Cu electrodes. The deposited dielec. layers were dried, exposed with UV radiation, patterned, and thermally cured. Top capacitor electrodes (copper) were deposited using a metal or an e-beam evaporator. The electrodes were patterned using the std. photolithog. processes. Selected good samples were used for depositing the 2nd capacitor layer. The RC network is extended to incorporate electroplated polymer/ferrite core micro-**inductors** through the fabrication of an industry prototype low pass RLC filter. Meniscus coating was evaluated for large area manufg. with high process yield. A capacitance d. of .apprx. 3 nF/cm2 was obtained on a single layer capacitor with .apprx. 6 .mu.m thick films. The capacitance d. was increased to .apprx. 6 nF/cm2 with the 2-layer deposition process. The capacitors were relatively stable up to a frequency range of 120 Hz to 100 kHz. Meniscus coating was qualified to be a viable manufg. method for depositing polymer/ceramic capacitors on large area (300 mm .times. 300 mm) PWB substrates. Dielec. const. values in the range 3.5-35 with increase in filler loading up to 45 vol.% were achieved in the epoxy nanocomposite system where the dielec. const. of the host polymer was limited to .apprx. 3.5. Higher dielec. const. polymers are required to meet the increasingly higher capacitance needs for the next generation electronics packaging. Possible avenues for achieving higher capacitance d. in polymer/ceramic nanocomposite system have been discussed.
ST review passive material **integrated circuit** resistor

L73 ANSWER 4 OF 61 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2001-079592 [09] WPIX
CR 2001-218083 [22]
DNN N2001-060555 DNC C2001-022801
TI Formation of a stress release contact system in an **integrated circuit** involves using a leveling plate at elevated temperature causing the posts to tilt relative to the wafer surface and be encapsulated in an elastomer.
DC L03 U11
IN LIN, M
PA (LINM-I) LIN M
CYC 1
PI US 6159773 A 20001212 (200109)* 9p H01L021-44
ADT US 6159773 A US 1999-249252 19990212
PRAI US 1999-249252 19990212
IC ICM H01L021-44
ICS H01L021-48; H01L021-50
AB US 6159773 A UPAB: 20010421
NOVELTY - A stress release contact system is formed in an **integrated circuit** through application of force to a leveling plate at elevated temperature, causing the posts to tilt relative to the wafer upper surface and be encapsulated in an elastomer. An orthogonal spiral that acts as a **coil** spring to absorb stress originating at the solder ball is formed.

DETAILED DESCRIPTION - Formation of a stress release contacting system in an **integrated circuit** comprises (a) providing a silicon wafer containing a completed **integrated circuit** and having an upper surface on which contact pads are connected; (b) **forming** first **metal** posts (21), attached one-on-one to the contact pads and extending vertically upward from the pads; (c) placing a leveling **plate** on the **metal** posts; (d) through application of force to the leveling plate at an elevated temperature, causing the posts to tilt at an angle relative to the wafer upper surface and to point in a direction; (e) filling all empty spaces between the leveling plate and the wafer surface with an elastomer (42) while leaving all ends of the posts uncovered; (f) removing the leveling **plate**; (g) **forming** a second **metal** posts (22) that attach one-on-one to the uncovered ends; (h) placing a leveling **plate** on the **metal** posts; (i) through application of force to the leveling plate at an elevated temperature, causing the posts to tilt at the angle relative to the wafer upper surface and to point in a direction which is orthogonal to the direction of the most recently formed posts; (j) repeating steps (e) through (i) several times; (k) filling all empty spaces between the leveling plate and the wafer surface with an elastomer (43) while leaving all ends of the posts uncovered; (l) removing the leveling **plate**; (m) **forming** underlayer barrier **metal** pads (61) on all uncovered ends of the posts; and (n) forming solder balls (62) that extend upwards and are attached to the underlayer barrier metal pads.

USE - For the formation of a stress release contacting system.

ADVANTAGE - The method provides a structure that absorbs stress between **integrated circuits** package and semiconductors.

DESCRIPTION OF DRAWING(S) - The figure shows a silicon wafer.

Metal posts 21, 22

Elastomer 42, 43

Underlayer barrier metal pads 61

Solder balls 62

Dwg.6/9
TECH US 6159773 A UPTX: 20010213
TECHNOLOGY FOCUS - ELECTRONICS - Preferred Method: The step of **forming** the **metal** posts further comprises depositing a

blanket layer of metal. The metal layer is coated with photoresist. The photoresist is processed to form a mask that is present everywhere except for holes on the contact pads. By means of electroplating, the holes are filled with the metal. The photoresist is then removed, leaving metal posts, and the blanket layer is then removed. The elevated temperature is 100-400degreesC, and the tilt angle is 15-75degrees. The step of filling with elastomer further comprises placing the wafer in a vacuum at 0.1 torr, after the leveling plate has cooled down. The elastomer is dispensed along all edges of the wafer. The pressure is returned to atmospheric, which causes the elastomer to be sucked to the empty space. The posts have a diameter of 5-100mum, and a length of 5-200mum. The number of times that steps (e) through (i) are repeated is 0-10 times. The process between steps (f) and (g) further comprises depositing a layer of joint strengthening metal on the elastomer; and patterning and etching the layer to form joint strengthening discs symmetrically disposed on and around the uncovered ends.

TECHNOLOGY FOCUS - POLYMERS - Preferred Elastomer: The elastomer is silicone elastomer, or polyimides. It can also be a benzocyclobutene.
TECHNOLOGY FOCUS - INORGANIC CHEMISTRY - Preferred Material: The metal posts are gold, silver, copper, solder, or aluminum.

FS CPI EPI

L73 ANSWER 9 OF 61 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2000-498812 [44] WPIX
DNN N2000-369789
TI Passive remote programmer system for **induction** type radio frequency identification reader, has programmer unit operated in co-operation with microprocessor to recognize unique tag code.
DC W01 W05
IN CASDEN, M S
PA (CASD-I) CASDEN M S; (SOUN-N) SOUNDCRAFT INC
CYC 88
PI WO 2000036849 A1 20000622 (200044)* EN 33p H04Q001-00
AU 2000018436 A 20000703 (200046) H04Q001-00
EP 1101364 A1 20010523 (200130) EN H04Q001-00
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI
US 6285295 B1 20010904 (200154) G05B019-02

PRAI US 1998-212583 19981214
IC ICM G05B019-02; H04Q001-00
AB WO 200036849 A UPAB: 20000913
NOVELTY - A handheld programmer unit of the system has an **antenna**. Several dedicated radio frequency identification (RFID) transponder tag **ICs** (IC1-IC16) and a keypad. The keys of keypad are operated to connect the tag **ICs** to the **antenna** so as to power the **ICs** by **induction**. A microprocessor is operated with the programmer unit for recognizing the unique tag code indicated by the actuation of the keys.

DETAILED DESCRIPTION - The **antenna** includes an **inductor** (L1) and a capacitor (C1). The RFID reader has RF sensing unit operationally connected to the microprocessor for reading tag identification data for the transponder tags. The presence of authorized tag is recognized by verifying identification data against stored identification data. An INDEPENDENT CLAIM is also included for wireless linkage method for linking keypad to an **induction** type RFID reader.

USE - For **induction** type radio frequency identification (RFID) reader for use in controlling areas to restricted areas of buildings or plant.

ADVANTAGE - Since keypad and **antenna** are arranged on a single **circuit** board, a light weight remote programmer system package is obtained. Since the transponder tag **ICs** require less power, the proximity reader is operated in an **extended** operating **range**.

DESCRIPTION OF DRAWING(S) - The figure shows the **circuit** diagram of the remote programmer.
Capacitor C1
Tag **ICs** IC1-IC16
Inductor L1
Dwg.2/2

L73 ANSWER 11 OF 61 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2000-276008 [24] WPIX
DNN N2000-207392 DNC C2000-083868
TI Transfer material for multilayered printed wiring board manufacture, has mask pattern over nickel phosphorus plating layer, and adhesive layer is formed on conductive pattern formed on non-masked area of substrate.
DC L03 P73 V04
PA (NIPQ) DAINIPPON PRINTING CO LTD
CYC 1
PI JP 2000068628 A 20000303 (200024)* 9p H05K003-20
ADT JP 2000068628 A JP 1998-239169 19980825
PRAI JP 1998-239169 19980825
IC ICM H05K003-20
ICS B32B015-08; H05K001-09
AB JP2000068628 A UPAB: 20000522
NOVELTY - A nickel phosphorus plating layer is provided over conductive surface of conductive substrate (1). An electric insulation mask pattern (2') is **formed** over **plating** layer. Conductive pattern (3) is formed on the substrate in the areas which are not masked. An adhesive layer (4) is formed above the conductive pattern.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for manufacturing method of transfer material.

USE - Used for manufacture of multilayered printed wiring board, suspension with wiring of hard disk magnetic head, **coil** wiring for non-contact **IC** cards.

ADVANTAGE - Loss of wiring before transfer and peeling are prevented. Loss of wiring by internal stress between **metal plating** is prevented, as adhesive layer is provided over conductive pattern.

DESCRIPTION OF DRAWING(S) - The figure shows the explanatory drawing of transfer material manufacturing method.

Conductive substrate 1
Electric insulation mask pattern 2'
Conductive pattern 3
Adhesive layer 4
Dwg.2/3
FS CPI EPI GMPI
FA AB; GI

L73 ANSWER 12 OF 61 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2000-125849 [11] WPIX
DNN N2000-094844 DNC C2000-038272
TI Integrated multi-turn inductor **coil** for low-loss integrated RF inductor structures, including toroidal and horizontal helical inductors used in e.g. passive filter.
DC G06 L03 U11 U12 U13 U25 W01
IN ALFORD, R C; MARLIN, G W; STENGEL, R E; WEISMAN, D H
PI US 6008102 A 19991228 (200011)* 10p H01L029-00
ADT US 6008102 A US 1998-56967 19980409
PRAI US 1998-56967 19980409
IC ICM H01L029-00
AB US 6008102 A UPAB: 20000301
NOVELTY - An integrated multi-turn inductor **coil** is fabricated by depositing a photoresist layer, forming a trench and filling the trench with metal, repeating the sequence twice more and removing the three photoresist layers.

DETAILED DESCRIPTION - The method comprises:

(1) forming the bottoms of the turns by depositing photoresist (406) over a semiconductor substrate, forming a trench and filling the trench with electroplated metal;

(2) forming the sides of the turns by adding a second photoresist layer (408) over the first, forming first and second trenches and filling the trenches with electroplated metal;

(3) forming the tops of the turns by depositing a third photoresist layer (416), forming a trench and filling the trench with electroplated metal; and

(4) removing the three photoresist layers.

In further embodiments:

(1) an integrated transformer, preferably a 1:1 or multiport transformer, is fabricated by simultaneously forming at least two multi-turn **coils** on a substrate by the above method; and

(2) an integrated inductor, preferably a toroidal or helical inductor, is formed by the above method with a **sputtered metal** layer included between a sputtered substrate barrier layer and the first photoresist layer and between the second photoresist layer and its filled trenches and the third photoresist layer. On completion, the three **sputtered metal** layers and the three photoresist layers are removed to expose the three **plated metal** layers **forming** the inductor.

USE - In fabrication of low-loss integrated RF inductor structures, including toroidal and horizontal helical inductors, using standard IC processes. Used in e.g. passive filter, voltage controlled oscillator (VCO), matching network, and transformer. For portable **communications** equipment.

DESCRIPTION OF DRAWING(S) - The drawings show the final stage in the fabrication of a three-dimensional integrated inductor by the method of the invention.

Sputtered Cu layer 304
Sputtered TiW barrier layer 306
First photoresist layer 406
Second photoresist layer 408
Sputtered Cu or TiW layer 414
Third photoresist layer 416
Plated metal, e.g. Cu 420

Dwg.9,10/16
FS CPI EPI
FA AB; GI

L73 ANSWER 13 OF 61 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2000-100515 [09] WPIX
DNN N2000-077677 DNC C2000-029509
TI Non-contact integrated chip card manufacturing apparatus - has locating unit to align window hole made on upper resin sheet by punching unit to primary sheet for chip insertion.
DC A85 L03 P76 T04 U14
PA (TOPP) TOPPAN PRINTING CO LTD
CYC 1
PI JP 11296644 A 19991029 (200009)* 4p G06K019-077
ADT JP 11296644 A JP 1998-102691 19980414
PRAI JP 1998-102691 19980414
IC ICM G06K019-077
ICS B29C063-02; B42D015-10; G06K019-07
AB JP 11296644 A UPAB: 20000218
NOVELTY - The apparatus has supply units (5) to supply resin sheet to the upper and lower sides of a primary sheet **mounting** an **IC** chip. A **punching** unit (6) opens a window hole on the upper resin sheet for chip insertion. A sealing unit (8) joins the sheet after the upper and the primary sheets are aligned.

DETAILED DESCRIPTION - The primary sheet has **antennas** and is supplied by a sheet supply unit (2). The punching unit opens the window hole on the upper resin sheet corresponding to the position in which the **IC** chip is to be inserted. A locating unit (7) aligns the upper sheet containing window hole to the primary sheet so that the **IC** chip is inserted in the window hole. The sealing unit fuses the sheets and joins them to form a laminate so that the **IC** chip is covered and protected.

USE - For protecting non-contact integrated chips.

ADVANTAGE - Damage is reduced or eliminated. Rupture failure of the chip is reduced. The **IC** card does not have unevenness in the card surface. The quality of the **IC** card is good. There is no offset of the hole to the primary sheet. There is no offset of the **IC** mounted sheet to the cutting unit.

DESCRIPTION OF DRAWING - The figure shows the schematic top view of the non-contact **IC** card manufacturing apparatus. (2) Primary sheet supply unit; ; (5) Resin sheet supply unit; ; (6) Punching unit; ; (7) Locating unit; ; (8) Sealing unit.

Dwg.2/3
FS CPI EPI GMPI
FA AB; GI

L73 ANSWER 14 OF 61 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2000-050812 [04] WPIX
DNN N2000-039521
TI Contactless radio frequency label on adhesive backing.
DC T05 U14
IN HOGEN ESCH, J H L; ESCH, J H L H
PA (NEDA) NEDAP NED APPARATENFAB NV
CYC 25
PI NL 1008353 C2 19990820 (200004)* 10p H01L023-64
EP 949678 A1 19991013 (200004) EN H01L023-64
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI
ADT NL 1008353 C2 NL 1998-1008353 19980219; EP 949678 A1 EP 1999-200475 19990219
PRAI NL 1998-1008353 19980219
IC ICM H01L023-64
ICS H01L023-538
AB NL 1008353 C UPAB: 20000124
NOVELTY - The **coil** (1) is a metal track printed onto a flexible substrate. The ends (3, 4) of the **coil** are connected by metal pads (5, 6) to the **integrated circuit** The connections are made by **sputtering metal** onto the connection pads, via openings in a mask.
USE - For security label of shop goods.
ADVANTAGE - Simple construction.
DESCRIPTION OF DRAWING(S) - The drawing shows a plan view of label.
Coil 1
Integrated circuit 2
End of **coil** 3
End of **coil** 4
Connection pad 5
Connection pad 6
Dwg.1/3
FS EPI
FA AB; GI

L73 ANSWER 15 OF 61 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1999-314918 [27] WPIX
DNN N1999-235373
TI Dielectric filter using dielectric resonator for **communications device**.
DC W02
IN HIMI, Y; NAKATANI, Y; NISHIYAMA, T; WAKAMATSU, H
PA (MURA) MURATA MFG CO LTD
CYC 30
PI EP 917239 A1 19990519 (199927)* EN 15p H01P007-10
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI
NO 9805147 A 19990506 (199928) H01Q001-207
CA 2252364 A1 19990505 (199942) EN H01P001-20
CN 1223478 A 19990721 (199947) H01P001-207
JP 11312904 A 19991109 (200004) 8p H01P001-212
KR 99045038 A 19990625 (200036) H01P001-202
ADT EP 917239 A1 EP 1998-120842 19981103; NO 9805147 A NO 1998-5147 19981104; CA 2252364 A1 CA 1998-2252364 19981103; CN 1223478 A CN 1998-123981 19981105; JP 11312904 A JP 1998-305654 19981027; KR 99045038 A KR 1998-47315 19981105
PRAI JP 1997-302647 19971105
IC ICM H01P001-20; H01P001-202; H01P001-207; H01P001-212; H01P007-10; H01Q001-207
ICS H01P001-213; H01P005-04; H01P005-08; H01Q001-00
AB EP 917239 A UPAB: 19991122
NOVELTY - The filter (10) has a dielectric resonator (20) that is positioned in a cavity. An external connector (13) provides an input/output path and connects internally to a coupling **loop** (12). This **loop** is **formed** by a **metal plate** bent essentially into an L-shape. The plate is provided with one or more ribs (14) that are not parallel to the bent line. These ribs provide additional strength and alter the natural resonance frequency. A flexible conductor (12b) connects to the terminals.

USE - As filter and duplexer for **communications device**.

ADVANTAGE - Increasing resonance frequency of the coupling plate avoids vibrations affecting performance while the flexible conductor simplifies the manufacturing process.

DESCRIPTION OF DRAWING(S) - The drawing shows a perspective view of the dielectric filter.

Frame 11
Coupling **loop** 12
Flexible conductive connector 14
Strengthening ribs 12b
Resonator 20
Cavity 30
Dwg.1/10
FS EPI
FA AB; GI
MC EPI: W02-A02; W02-A03A3C; W02-A05B1C; W02-A05B1E; W02-A05K7; W02-A08A;

L73 ANSWER 16 OF 61 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1999-224757 [19] WPIX
DNN N1999-167131
TI Non-contact **IC** card for use as season ticket, telephone card - has **IC** chip and **antenna coil** connected to **metal plate** on which **circuit** pattern is formed.
DC P76 T04 U14
PA (HITM) HITACHI MAXELL KK
CYC 1
PI JP 11059036 A 19990302 (199919)* 6p B42D015-10
ADT JP 11059036 A JP 1997-224921 19970821
PRAI JP 1997-224921 19970821
IC ICM B42D015-10
ICS G06K019-07; G06K019-077
AB JP 11059036 A UPAB: 19990518
NOVELTY - An **IC** chip (1) and an **antenna coil** (2) are connected to a **metal plate** (3) on which a **circuit** pattern is **formed**. A **metal** bump (7) provided at the edges of the **IC** chip connects the **IC** chip to **metal plate** by thermocompression bonding.
DETAILED DESCRIPTION - An INDEPENDENT CLAIM for Non- contact **IC** card manufacturing method is included.
USE - For use as season ticket, telephone card, driving license, money card.
ADVANTAGE - Enhances productivity of **circuit** module as **metal plate formed** is used in assembling of **circuit** module. Improves mass production as cost is reduced.
DESCRIPTION OF DRAWING(S) - The drawing is sectional view of non-contact **IC** card. (1) **IC** chip; (2) **Antenna coil** ; (3) **Metal plate**; (7) **Metal** bump.
Dwg.1/5
FS EPI GMPI

L73 ANSWER 17 OF 61 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1999-167630 [14] WPIX
DNN N1999-122112
TI Apparatus for depositing layer of metal containing material on workpiece surface.
DC U11 V05
IN HONG, L
PA (MATE-N) APPLIED MATERIALS INC; (HONG-I) HONG L
CYC 23
PI WO 9908308 A1 19990218 (199914)* EN 36p H01J037-32
RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE
W: JP KR SG
EP 1002331 A1 20000524 (200030) EN H01J037-32
R: DE GB NL
TW 402759 A 20000821 (200117) H01L021-3205
JP 2001512792 W 20010828 (200156) 40p C23C014-40
KR 2001022685 A 20010326 (200161) H01J037-32
US 2001052455 A1 20011220 (200206) C23C014-34
ADT WO 9908308 A1 WO 1998-US16317 19980806; EP 1002331 A1 EP 1998-938398 19980806, WO 1998-US16317 19980806; TW 402759 A TW 1998-112921 19980805; JP 2001512792 W WO 1998-US16317 19980806, JP 2000-506673 19980806; KR 2001022685 A KR 2000-701280 20000207; US 2001052455 A1 CIP of US 1997-907382 19970807, US 1997-971867 19971119
FDT EP 1002331 A1 Based on WO 9908308; JP 2001512792 W Based on WO 9908308
PRAI US 1997-971867 19971119; US 1997-907382 19970807
IC ICM C23C014-34; C23C014-40; H01J037-32; H01L021-3205
ICS H01J037-34; H01L021-203; H01L021-285
AB WO 9908308 A UPAB: 19990412
NOVELTY - After deposition places a physical vapor deposition apparatus deposition chamber in which **metal** is **sputtered** from a target (4) and a **coil** to deposit a layer consisting of the sputtered material on a substrate after the deposition in the apparatus of a layer containing a reaction compound of the **sputtered metal**. A chamber is filled with a non reactive gas. A voltage is used to sputter from the target and **coil** (6) a reaction compound which has coated the target and **coil** during deposition of the layer containing the reaction compound of the **sputtered metal**.

USE - For depositing layers or films of metals and metal compounds on a workpiece or substrate during fabrication of **integrated circuits**, display components, etc.

ADVANTAGE - Improves the uniformity with which a layer of material is deposited on a substrate.

DESCRIPTION OF DRAWING(S) - The drawing shows the deposition apparatus.

coil 6
target 4
Dwg.1/4

L73 ANSWER 18 OF 61 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1998-588941 [50] WPIX
DNN N1998-459256
TI **IC** card - has bonding wire for connecting **coil** with **IC** chip which is arranged in corresponding through hole of substrate.
DC P76 T04
PA (NIPQ) DAINIPPON PRINTING CO LTD
CYC 1
PI JP 10264563 A 19981006 (199850)* 5p B42D015-10
ADT JP 10264563 A JP 1997-72064 19970325
PRAI JP 1997-72064 19970325
IC ICM B42D015-10
ICS G06K019-07; G06K019-077
AB JP 10264563 A UPAB: 19981217
The card (30) has a substrate (31) in which a through hole (36) is provided for arranging an **IC** chip (13). A **coil** (62a) is provided at one side of the substrate corresponding to the through hole. A bonding wire (14) is provided for connecting the **IC** chip and the **coil**.

The substrate consists of a printed film (51) with top and bottom copper foils (62,12). The terminal layers (12a) are provided in the top and the bottom copper foils.

ADVANTAGE - Simplifies manufacture. Eliminates need for **punching** and **adhesive** coating process. Prevents peeling off **IC** module by lack of bonding.

Dwg.1/6
FS EPI GMPI
FA AB; GI

L73 ANSWER 19 OF 61 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1998-039334 [04] WPIX
DNN N1998-031806 DNC C1998-013285
TI **Coil** part for e.g. portable telephone - using insulating adhesive, possessing elasticity in cured state, for adhering thin **plate**-shaped **metal** cores to each other and for joining laminated core and bobbin.
DC G03 T04 V02 W01
PA (MURA) MURATA MFG CO LTD
CYC 1
PI JP 09293614 A 19971111 (199804)* 8p H01F027-06
ADT JP 09293614 A JP 1996-104996 19960425
PRAI JP 1996-104996 19960425
IC ICM H01F027-06
ICS C09J183-04
AB JP 09293614 A UPAB: 19980126
The **coil** part comprises a laminated core (2) **formed** by stacking thin **plate**-shaped **metal** cores, a bobbin (3) incorporating an air core portion for inserting the laminate core (2), and a **coil** wound on the bobbin (3). An insulating adhesive, possessing elasticity in a cured state, is used for adhering the respective thin **plate**-shaped **metal** cores to each other and for joining the laminated core (2) and the bobbin (3).
USE - The **coil** parts are suitable for a portable telephone, an **IC** card, etc., requiring a high inductance function.
ADVANTAGE - Lowering of inductance caused by deterioration of magnetic permeability generated as a result of stress applied on the metal laminated core is eliminated while contributing for miniaturisation of a related **circuit**.
Dwg.1/9
FS CPI EPI
FA AB; GI
MC CPI: G03-B03

L73 ANSWER 21 OF 61 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1996-507916 [51] WPIX
DNN N1996-427952
TI Printed **circuit** e.g. radio frequency identification tag - has printed **antenna coil** integrated on flexible substrate and **integrated circuit** area adjacent **coil** for carrying **circuit** elements.
DC T04 T05 V02 V04 W02 W06
IN FERGUSON, D H; PAUN, M
PA (DISY-N) DISYS CORP; (KAST-N) KASTEN CAHSE APPLIED RESEARCH LTD; (KAST-N) KASTEN CHASE APPLIED RES LTD
CYC 9
PI EP 743615 A1 19961120 (199651)* EN 13p G06K019-077
R: BE DE DK FR GB NL SE
CA 2176625 A 19961120 (199712) H05K001-16
US 5914862 A 19990622 (199931) H05K001-14
US 6075707 A 20000613 (200035) H05K001-03
EP 743615 B1 20000816 (200040) EN G06K019-077
R: BE DE DK FR GB NL SE
DE 69609765 E 20000921 (200055) G06K019-077
US 6195858 B1 20010306 (200115) H01G004-40
PRAI US 1995-444969 19950519; US 1997-926321 19970905; US 1999-326167 19990604; US 1998-190382 19981110
REP EP 595549; WO 8301697; WO 8604172
IC ICM G06K019-077; H01G004-40; H05K001-03; H05K001-14; H05K001-16
ICS G01S013-75; G06K019-07; G07C011-00; H01P011-00; H04B001-59; H04Q009-00; H05K001-18; H05K003-00
AB EP 743615 A UPAB: 19970530
The printed **circuit** has an **imbedded antenna coil** printed on a flexible **circuit** board substrate. An **integrated circuit** area s adjacent the **coil** for carrying **circuit** elements. An electrical connector lies between the **coil** and the **integrated circuit** area.

A layer of semi-rigid material encapsulates the **integrated circuit** area for strengthening the substrate in the event of flexing. A membrane is laid over the layer of semi-rigid material, the substrate with the embedded **coil** and the electrical connector for providing a slip surface between the **circuit** elements.

ADVANTAGE - Sufficiently robust to withstand rigors of mail efficiency processing measurement applications.

Dwg.1a/4
FS EPI

L73 ANSWER 23 OF 61 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1995-028536 [04] WPIX
DNN N1995-022522
TI Radio frequency **antenna** for mobile radio telephone **communication device** - has dielectric substrate on L-shaped **metal plate**, with **metal** film **formed** above dielectric substrate.
DC W01 W02
PA (SAOL) SANYO ELECTRIC CO LTD
CYC 1
PI JP 06314984 A 19941108 (199504)* 9p H04B001-38
JP 3113460 B2 20001127 (200102) 8p H04B001-38
ADT JP 06314984 A JP 1993-212819 19930827; JP 3113460 B2 JP 1993-212819 19930827
FDT JP 3113460 B2 Previous Publ. JP 06314984
PRAI JP 1993-45217 19930305
IC ICM H04B001-38
ICS H01Q001-24
ICA H01Q013-08
AB JP 06314984 A UPAB: 19950201
The radio frequency **antenna** (14) is stuck firmly to a **metal plate** (17) and is provided in the upper part of a body (1). The first face (5) of the body has a speaker (4). A dielectric substrate (16) is provided on the **metal plate**. A **metal** foil (15) is **formed** above the dielectric substrate.

The metal board is L-shaped. The second face (17b) of the **metal plate** is perpendicular to the first face (17a) of the **metal plate** which consists of the dielectric substrate. The first face of the **metal plate** is arranged along the back (18) of the body.

ADVANTAGE - Prevents deterioration of **antenna** characteristic by human influence. Completely separates **antenna** and **circuit** parts inside telephone using **metal plate**. Provides miniaturises device.

Dwg.1/8
FS EPI

L73 ANSWER 25 OF 61 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1993-243493 [30] WPIX
DNN N1993-187306
TI Single **integrated circuit** chip radio receiver-transmitter - has **antenna** switch, amplifiers and mixers of single section located in recess behind dielectric substrate forming off-chip filter.
AW **IC**.
DC U23 W02
IN HIGGINS, R J
PA (MOTI) MOTOROLA INC
CYC 18
PI WO 9314573 A1 19930722 (199330)* EN 16p H04B001-44
RW: AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE
W: JP
US 5355524 A 19941011 (199440) 7p H04B001-44
ADT WO 9314573 A1 WO 1993-US485 19930121; US 5355524 A US 1992-822809 19920121
PRAI US 1992-822809 19920121
REP US 4476575; US 4907291; US 5157364
IC ICM H04B001-44
AB WO 9314573 A UPAB: 19931118
The chip has an **antenna** switch (208), with **antenna** receive and transmit ports. A low-noise amplifier (21) is coupled to the receive port of the **antenna** switch and is in turn coupled to a mixer (214). A second mixer is coupled to the first mixer to receive a reference signal, as well as a second reference signal from a local oscillator.

A power amplifier is connected to the second mixer and supplies an output signal to the transmit port of the **antenna** switch. The second mixer is an image suppression mixer. The chip is located in a dielectric structure which forms a stripline filter.

ADVANTAGE - Allows all of RF receive and transmit **circuitry** to be integrated onto single die, together with filter.

Dwg.2/3
ABEQ US 5355524 A UPAB: 19941128
A single chip receiver/transmitter section (202) includes an **antenna** switch (208), a low noise amplifier (210), a power amplifier (212) and a first (214) and second (216) mixers. The **antenna** switch (206)includes an **antenna** terminal (256) which is coupled to an off-chip band pass filter (206) which provides all of the selectivity for radio (200).

The transmitter/receiver structure incorporates a transmission line filter such as band pass filter (206) formed by substrates and includes the single chip transmitter/receiver section (202) **imbedded** inside of the structure.

ADVANTAGE - Radio has greater compatibility with **integrated circuit** technology, with entire active RF section provided in one **IC** die.

Dwg.2/3
FS EPI
FA AB; GI

L73 ANSWER 26 OF 61 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1993-228593 [29] WPIX
DNN N1993-175445 DNC C1993-101735
TI High accuracy surface mount **inductor** - has a flat planar structure with parallel conductive **coil** patterns whose geometry permits small size, high power and extremely tight tolerances.
AW POLYIMIDE.
DC A28 A85 L03 V02
IN BREEN, B N
PA (AVXA-N) AVX CORP
CYC 8
PI EP 551735 A1 19930721 (199329)* EN H01F027-28
R: DE DK FR GB IT SE
US 5363080 A 19941108 (199444) 7p H01F015-10
JP 06290951 A 19941018 (199501) 10p H01F017-00
US 5398400 A 19950321 (199517) 8p H01F041-04
EP 551735 B1 19990721 (199933) EN H01F027-28
R: DE DK FR GB IT SE
DE 69229624 E 19990826 (199940) H01F027-28
ADT EP 551735 A1 EP 1992-311182 19921208; US 5363080 A US 1991-813789 19911227; JP 06290951 A JP 1992-239798 19920908; US 5398400 A Div ex US 1991-813789 19911227, US 1993-47789 19930415; EP 551735 B1 EP 1992-311182 19921208; DE 69229624 E DE 1992-629624 19921208, EP 1992-311182 19921208
FDT DE 69229624 E Based on EP 551735
PRAI US 1991-813789 19911227
REP US 4310821; US 4313152; US 4543553; US 4613843; US 4626816; US 4641114; US 4803543; US 4926292
IC ICM H01F015-10; H01F017-00; H01F027-28; H01F041-04
ICS H01F027-30
AB EP 551735 A UPAB: 19931119
Inductor comprises: flat insulating substrate (11); first insulating layer having a channel defining a first planar **coil** with a central terminus; first metal **coil** (12) filling the channel; second insulating layer with a via to the first **coil** central terminus; third insulating layer having a channel defining a second planar **coil** with a central terminus in registry with the via; second metal **coil** (18) filling the second channel; a via conductor connecting the **coils**; an insulating cover layer (25) and terminations (23,24) for each **coil** at their outermost portions (13,20).
The three insulating layers are pref. of photo-imagable polyimide.
USE/ADVANTAGE - In a wide **range** of **communications devices**. Geometry of the device and its terminations permit extremely tight tolerances, e.g. 2-5%, to be retained.
Dwg.1/2
ABEQ US 5363080 A UPAB: 19941223
High accuracy surface mount **inductor** comprises a flat rectangular substrate (11) of e.g. alumina on which a spiral conductor pattern (12) is formed, over which is a polymeric insulating layer (16). A second spiral conductor pattern (18) is formed on the insulator. Patterns are linked by a conductive metallic component (22) in a via in the insulating layer (16), and are connected at their centres U-shaped terminations (23,24) cover the ends of the member.
Insulating layers are pref. of photo-imageable polyimide.
USE/ADVANTAGE - Used e.g. in cellular phones, cable TV, vehicle location systems and high frequency filters. Geometry allows extremely tight tolerances to be maintained.
Dwg.1/2
ABEQ US 5398400 A UPAB: 19950508
High accuracy surface mount indicator is mfd. on a substrate (11), e.g. of alumina, on which a metal conductive spiral pattern (12) is formed, with polyimide insulator layer (16) over it, having an aperture (17) in

registry with the pattern terminus (15). A second spiral pattern (18) is then formed with innermost terminus (19) adjacent to the via (17), filled with metal (22), pref. Cu, Al, Au or Ag. Terminations (23,24) are formed over the side ends (14,21) of the spirals. Metal for the spirals is deposited in photolithographically defined channels in the insulating layers by electroplating to a thickness of 28 microns.

USE/ADVANTAGE - Used in e.g. cellular pones, personal **communication** networks, cables TV, global positioning systems, vehicle location systems and high frequency filters. Extremely high tolerances can be maintained.

Dwg.1/2

FS CPI EPI

FA AB; GI

L73 ANSWER 30 OF 61 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1988-249891 [35] WPIX
CR 1989-263414 [36]; 1990-057857 [08]
DNN N1988-190329
TI Transmit receive system for phased array active **antenna** system - has multiple individual transmit receive cells mounted on common semiconductor wafer each with redundant devices interconnected by switches.
DC P78 U13 W02 W06
IN ALEXANDER, D K; CRESSWELL, M W; DRIVER, M C; FREITAG, R G; NATHANSON, H C; YAW, D F
PA (WESE) WESTINGHOUSE ELECTRIC CORP
CYC 12
PI WO 8806351 A 19880825 (198835)* EN 72p
RW: AT BE CH DE FR GB IT LU NL SE
W: JP
US 4823136 A 19890418 (198918) 43p
EP 346394 A 19891220 (198951) EN
R: DE FR GB
US 4894114 A 19900116 (199010) 38p
US 4904831 A 19900227 (199015)
JP 02502689 W 19900823 (199040)
EP 346394 B1 19941019 (199440) EN 52p H01Q003-26
R: DE FR GB
DE 3851886 G 19941124 (199501) H01Q003-26
ADT WO 8806351 A WO 1988-800312 19880125; US 4823136 A US 1987-13490 19870211; EP 346394 A EP 1988-903001 19880125; US 4894114 A US 1989-293164 19890103; US 4904831 A US 1989-293164 19890103; EP 346394 B1 EP 1988-903001 19880125, WO 1988-US312 19880125; DE 3851886 G DE 1988-3851886 19880125, EP 1988-903001 19880125, WO 1988-US312 19880125
FDT EP 346394 B1 Based on WO 8806351; DE 3851886 G Based on EP 346394, Based on WO 8806351
PRAI US 1987-13490 19870211; US 1989-292973 19890103; US 1989-293164 19890103
REP EP 246640; GB 2187333; US 3200369; US 3796976; US 4503436; 5.Jnl.Ref
IC B44C001-22; C03C015-00; C03C025-06; G01S007-02; H01H001-02; H01L021-30; H01Q003-26
ICM H01Q003-26
ICS B44C001-22; C03C015-00; C03C025-06; G01S007-02; H01H001-02; H01L021-30
AB WO 8806351 A UPAB: 19941206
The apparatus transmits or receives a multiplicity of individual phased-shifted radio frequency signals, and has a single planar wafer of semiconductor mateiral with a top and bottom surface. Transmit receive cells (7), are layered upon the top surface and consists of a multiplicity of redundant electronic devices. These devices are operable to be selectively, permanently interconnected during manufacture and test of apparatus. They are interconnected by mechanical, pressure sensitive switches (27) to form a transmit **circuit** and a receive **circuit** upon each of the transmit receive cells.

Electrical energy input lines (65) are formed upon the top surface between the individual transmit-receive cells. The input lines are operable to supply electrical energy to the devices of the transmit-receive cell. A multiplicity of electrical interconnect vias (57, 61, 62) are etched within the single wafer. The via is operable to electrically interconnect the devices upon the top surface to direct current energy sources layered beneath the transmit-receive cells. The vias are further operable to interconnect and supply a radio frequency signal to the devices during the active, phased array **antenna** system operation.

USE/ADVANTAGE - Broadband radar or broadband electronic warfare devices on advanced electronic systems in aircraft. Resolves problem of

multiple microelectronic modules and their resultant combined weight.
11/12
Dwg.11/12

ABEQ US 4823136 A UPAB: 19930923
The transmit-receive cells utilise novel mitered mechanical switches to permanently interconnect individual electronic devices into either transmit or receive **circuits** during the fabrication and test of the transmit-receive cells. Radio frequency and direct current input and output vias formed from a novel **metal evaporation** technique connect the devices upon the surface of the common semiconductor wafer to underlying, insulated direct current distribution **circuits** and a radio frequency manifold.

This array of improved phased-array active **antenna** transmit-receive means comprised of transmit-receive cells sharing common central processing means, logic control and heat dissipation means results in a significant reduction in the size and weight of the standard phased-array active **antenna** system.

USE - Broad band electronic countermeasure systems or narrow band phase array active **antenna** radar systems as used in advanced tactical fighters, or space applications.

ABEQ US 4894114 A UPAB: 19930923
A phased-array active **antenna** transmitter/receiver uses a number of individual transmit-receive cells positioned in an ered array format upon a common wafer of semiconductor material. Each transmit-receive cell, comprises a number of redundant, **integrated circuit**, electronic devices implanted upon the common semiconductor substrate. The transmit-receive cells utilise novel mit mechanical switches to permanently interconnect individual electronic devices into either transmit or receive **circuits** during the fabrication and test of the transmit-receive cells.

Radio frequency and direct current input and output vias formed from a **metal evaporation** technique connect the devices upon the surface of the common semiconductor wafer to underlying, insulated direct current distribution **circuits** and a radio frequency manifold. The transmit-receive cells share common central processing logic control and heat dissipation, giving a significant reduction in the size and weight of the standard phased-array active **antenna** system.

USE/ADVANTAGE - Reduced size and weight **antenna** system for broad band electronic countermeasure or narrow band phased array active **antenna** radar systems in advanced tactical fighters, or space applications.

ABEQ EP 346394 B UPAB: 19941128
A transmit-receive apparatus (1a,1b) operable for use in an active, phased array **antenna** system to transmit or receive a multiplicity of individually phase-shifted radio frequency signals, which comprises a single planar wafer of semiconductor material (17), said single planar wafer of semiconductor material (17) having a top and a bottom surface, and a number of electrical energy input lines (65), said lines formed upon said top surface of said single planar wafer of semiconductor material (17) between individual transmit-receive cells (7), said number of electrical energy input lines (65) supplying electrical energy to selectively interconnected devices of said transmit-receive cell (7), and a multiplicity of electrical interconnect vias (57,61,62) etched within said single wafer of semiconductor material (17) of said transmit-receive apparatus (1a,1b) and operable to electrically interconnect said devices upon said top surface of said transmit-receive cell (7), to direct current energy sources layered beneath said transmit-receive cells (7), and further to interconnect and supply a radio frequency signal to said devices of said transmit-receive apparatus (1a,1b) during said active, phased array **antenna** system operation, characterised by: said transmit-receive cells (7) layered upon said top surface of said single planar wafer of said semiconductor material (17), said selectively

interconnected devices of said transmit-receive cells (7) being a multiplicity of redundant electronic devices, being selectively, permanently interconnected during manufacture and test of said transmit-receive apparatus (1a,1b), said selectively permanently interconnected electronic devices being interconnected by mechanical, pressure sensitive switches (27) to form a transmit **circuit** and a receive **circuit** upon each of said transmit-receive cells (7).
Dwg.1/12a
FS EPI GMPI

L73 ANSWER 33 OF 61 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1987-093511 [13] WPIX
DNN N1987-070163
TI Credit tele-card with active electronics - has logic processors and data storage modules accessed by application of power via electromagnetic coupling.
DC T01 T04 W02
PA (FOLE-I) FOLETTA W S
CYC 1
PI US 4650981 A 19870317 (198713)* 8p
ADT US 4650981 A US 1984-574483 19840126
PRAI US 1984-574483 19840126
IC G06K007-08
AB US 4650981 A UPAB: 19930922
The data card comprises a card body and a memory for storing data on an integrated semiconductor chip **imbedded** in the body. An inductive **loop** on the chip is coupled to the memory and adapted to transfer data to the card reader through inductive coupling of electromagnetic energy. A power supply **circuit** is coupled to the inductive **loop** for providing power to the memory from a power signal provided to the inductive **loop** from the card reader.

A **circuit** on the chip transfers data from the memory to the card reader through the inductive **loop**. A **communications device** alternately receives an input data signal and generates an output data signal according to a half duplex protocol. The induced power signal comprises a baseband signal.

ADVANTAGE - Increases readability and security.

3/3
FS EPI
FA AB
MC EPI: T01-C09; T01-J05A; T04-K; W02-C02

L73 ANSWER 44 OF 61 JAPIO COPYRIGHT 2002 JPO
AN 1998-162112 JAPIO
TI **IC** CARD
IN NAGATA SATOSHI
PA MITSUI HIGH TEC INC, JP (CO 325382)
PI JP 10162112 A 19980619 Heisei
AI JP1996-337566 (JP08337566 Heisei) 19961202
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 98, No. 6
IC ICM (6) G06K019-07
ICS (6) B42D015-10; (6) G06K017-00; (6) G06K019-077
AB PURPOSE: TO BE SOLVED:To obtain an **IC** card that can be made smaller in size and requires little time and labor for wiring, etc., by forming a transmitting and a receiving **antenna** integrally within a chip where the main **circuit** of the **IC** card is formed.
CONSTITUTION: **IC** card 10 is constituted by embedding a chip 17, equipped with a transmitting and receiving **circuit** 12 formed directly on a silicon wafer 11, the transmitting **antenna** 13 and receiving **antenna** 14 connected thereto, a power receiving **antenna** 16 which receives external electric power, and a control **circuit** 16 which controls the entirety and is equipped with a memory inside, in a casing 18 made of synthetic resin. Therefore, the wiring of the transmitting and receiving **antennas** 13 and 14 is omitted. For the wiring of the **antennas** 13 and 14, there is a method which vapor-depositing or **sputtering metal** such as aluminum on an insulator and then etching it and a direct lead pattern is formed for other **circuits**. The power receiving **antenna** 15 is also provided in the chip 17, so electric power is received by radio from outside.

L73 ANSWER 46 OF 61 JAPIO COPYRIGHT 2002 JPO
AN 1997-277766 JAPIO
TI NON-CONTACT TYPE **IC** CARD AND ITS MANUFACTURE
IN MATSUDA KAZUO
PA TOKIN CORP, JP (CO 330203)
PI JP 09277766 A 19971028 Heisei
AI JP1996-88383 (JP08088383 Heisei) 19960410
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 97, No. 10
IC ICM (6) B42D015-10
ICS (6) G06K019-07; (6) G06K019-077
AB PURPOSE: TO BE SOLVED:To provide a non-contact type **IC** card of a structure of fixing a **communication circuit** and a **communication coil** on a card base without using a bonding agent or an adhesive tape and also provide its manufacturing method.
CONSTITUTION: ird core sheet 8 and a fourth core sheet 9 are overlapped together on both faces of a core sheet laminate 14 formed by pinching a **communication circuit** 3 and a **communication coil** 4 by a first core sheet 6 and a second core sheet 7, clamping a body thus **formed** by mirror face **metal plates**, heating the body up to the hard polyvinyl chroride fusion welding temperature and fixing by pressure thereon, and the **communication circuit** 3 and the **communication coil** 4 are fusion fixed on a hard polyvinyl chloride laminate formed by overlapping sheets 10 on pattern printed faces formed by the above arrangement to manufacture a card base.

L73 ANSWER 47 OF 61 JAPIO COPYRIGHT 2002 JPO
AN 1993-135227 JAPIO
TI INFORMATION MEDIUM
IN UENISHI MITSUAKI
PA MATSUSHITA ELECTRIC IND CO LTD, JP (CO 000582)
PI JP 05135227 A 19930601 Heisei
AI JP1991-300100 (JP03300100 Heisei) 19911115
SO PATENT ABSTRACTS OF JAPAN, Unexamined Applications, Section: P, Sect. No. 1615, Vol. 17, No. 519, P. 56 (19930917)
IC ICM (5) G06K019-07
ICS (5) G06K019-077
AB PURPOSE: To provide an information medium in which a **range** where a **communication** can be attained can be enlarged, and a responding speed corresponding to a reader can be improved, in respect of an information medium which transfers data or a power by the reader and an electromagnetic **induction** without necessitating a mechanic connecting part.
CONSTITUTION: A first **induction coil** 3a and a second **induction coil** 3b are mounted on a carrying body 1 so that position and shape of a plane can be almost overlapped, each of the plural **induction coils** 3a and 3b is set to be almost the same self-**inductance** value, and they are electrically connected in parallel. Thus, an induced voltage detected by an **induction coil** 3 can be efficiently impressed on an **IC** chip 2 connected with those **induction coils** 3a and 3b, and a power supply voltage and the input voltage of data necessary for operation of the **IC** chip 2 can be prevented from being fluctuated against the change of an operating load of the **IC** chip 2.

L73 ANSWER 49 OF 61 JAPIO COPYRIGHT 2002 JPO
AN 1987-274733 JAPIO
TI MANUFACTURE OF **CIRCUIT** UNIT
IN HAYAKAWA TAKESHI; YAMAUCHI SATORU; WATANABE NARIHITO; KONDO ISAO
PA SEIKOSHA CO LTD, JP (CO 400433)
PI JP 62274733 A 19871128 Showa
AI JP1986-118470 (JP61118470 Showa) 19860523
SO PATENT ABSTRACTS OF JAPAN, Unexamined Applications, Section: E, Sect. No. 609, Vol. 12, No. 162, P. 143 (19880517)
IC ICM (4) H01L021-50
ICS (4) H01L021-56
AB PURPOSE: To unnecessitate the use of special retaining parts by a method wherein a plurality of lead pieces provided on a lead frame are integrally retained through the intermediary of potting resin covering an **integrated circuit**.
CONSTITUTION: When the first press working is going to be performed, the mounting holes 2a to a **coil** bobbin and the holes 2b to be used for prevention of the flow of synthetic resin are press-**punched** simultaneously. Then, an **integrated circuit** 3 is die-**bonded** on the prescribed position 21a of a coupling piece 21, lead pieces 22a-22e are connected by wire bonding, the potting resin 4 such as epoxy resin and the like is placed on the **integrated circuit** 3, a mold is arranged on the upper and the lower sides of the resin, and it is welded in a furnace. As there are holes 2b to be used for prevention of flow of resin, the potting resin 4 is prevented from spreading over the range wider than the flow-preventing holes 2b. The **integrated circuit** 3 is covered by said potting resin and, at the same time, the lead pieces 22a-22e are brought into a non- conductive state with each other, and they are integrally retained by the coupling piece 21.

L73 ANSWER 50 OF 61 JAPIO COPYRIGHT 2002 JPO
AN 1986-198387 JAPIO
TI **IC** CARD
IN YAMASHITA RIICHIRO; NOGUCHI NAOSHI
PA MITSUBISHI HEAVY IND LTD, JP (CO 000620)
PI JP 61198387 A 19860902 Showa
AI JP1985-39324 (JP60039324 Showa) 19850228
SO PATENT ABSTRACTS OF JAPAN, Unexamined Applications, Section: P, Sect. No. 540, Vol. 11, No. 29, P. 3 (19870128)
IC ICM (4) G06K019-00
AB PURPOSE: To attain data processing from a position parted more or less by **imbedding** a data processing section and a drive power supply feeding a drive voltage to a reception **circuit** and a transmission **circuit** into a card base so as to apply data processing contactlessly.
CONSTITUTION: The data processing section, the reception **circuit** , the transmis sion **circuit** and the drive power supply are **imbedded** to the card main body. Then a transmission signal from a fixed station 12 is received by a reception **antenna** 23, amplified to a microcomputer 22. A transmission data from the microcomputer 22 is modulated by a modulation **circuit** 27, where the data is converted into a radio wave signal and the drive **circuit** 18 applies power fault and sent to a fixed station 12 via a transmission **antenna** 29. An output voltage of a solar battery 21 is fed normally to the microcomputer 22, an ampli fier section 25 and the demodulation **circuit** 26 and given to the microcomputer 22 as a drive element as power drive adjustment, where the signal is controlled and fed to a modulation **circuit** 27 and the drive **circuit** 28 via a switching **circuit** 30 turned on at data transmission only.

L73 ANSWER 58 OF 61 HCAPLUS COPYRIGHT 2002 ACS
AN 1997:765059 HCAPLUS
DN 128:42690
TI **Electroformed** thin metal plate having ribs, and its manufacture
IN Shimazu, Hiroshi; Nakagawa, Hiroshi
PA Hitachi Maxell, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM B41C001-14
ICS B41F015-34; B41N001-24; H01L023-50; H05K003-12
CC 76-14 (Electric Phenomena)
Section cross-reference(s): 56, 72, 74
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09300573	A2	19971125	JP 1996-184107	19960624
	DE 19726869	A1	19980115	DE 1997-19726869	19970624
PRAI	JP 1996-87334		19960314		
	JP 1996-184107		19960624		

AB The invention relates to a thin metal plate, suited for use as a metal mask for screen printing in fabrication of a printed **circuit**, an **IC** lead frame, an ink jet nozzle, a deposition mask, a sheet **coil**, a planar **antenna**, and a rotary encoder, wherein the metal plate has fine continuous ribs on the surface formed by **electroforming** on a base plate having first plated fine grooves.

ST metal thin plate rib **electroforming**; mask metal screen printing **electroforming** rib
IT Printed **circuits**
Screen printing

L73 ANSWER 61 OF 61 HCAPLUS COPYRIGHT 2002 ACS
AN 1971:16852 HCAPLUS
DN 74:16852
TI Sputtered aluminum for **integrated circuits**
AU Williford, Joseph W.
CS Rome Air Dev. Cent., Griffiss Air Force Base, New York, N. Y., USA
SO Symp. Deposition Thin Films Sputtering, [Pap.], 3rd (1970), Meeting Date 9 Sep 1969-10 Sep 1969, 155-64 Publisher: Consolidated Vacuum Corp., Rochester, N. Y.
CODEN: 22LQAD
DT Conference
LA English
CC 71 (Electric Phenomena)
AB Consolidated Vacuum Corp.: Rochester. N. Y. The equipment utilized a basic triode configuration with a hot filament and an anode producing a flow of electrons to ionize the high-purity Ar admitted to the vacuum chamber operated at 2 .times. 10-6 torr. The high-purity Al target was kept at a high neg. voltage to attract the pos. Ar ions and produce **metal sputtering**. A magnet **coil** encircled the chamber to confine the ionized gas in the target region. Substrates used were 96% Al2O3 glazed ceramic wafers, glass slides, and oxidized Si wafers. The deposition rate was 1.44 .ANG./min/mA at 600 V and was independent of pressure at (0.6 - 8.0) + 10-6 torr. The deposition rate increased with increased target voltage and with increased target current. The resistivity of the sputtered Al film reached a min. at 7000-9000 .ANG. thickness, increased with increased pressure, and increased with the temp. of the annealing process used subsequent to sputtering. The annealing atm. was high-purity N. The capacitance-voltage characteristics of MOS capacitors were studied to det. whether any damage is done by high-energy atoms to the SiO2 insulation used in **integrated circuits**. Sputtered Al introduces more surface states to the oxide than evapd. Al, but annealing eliminates most of the states. Annealing also results in diffusion of Al ions into the oxide. There was no apparent correlation between voltage breakdown or electrode dissipation factors and the deposition method. The major disadvantage of sputtered Al for interconnections is higher resistivity, necessitating thicker films. A comparison of ohmic contacts was inconclusive.
ST sputering aluminum; aluminum sputtering; **integrated**

L80 ANSWER 1 OF 3 JAPIO COPYRIGHT 2002 JPO
AN 2000-048156 JAPIO
TI METHOD FOR FORMING **NON-CONTACT IC** MODULE **ANTENNA**
IN KAGAMI YASUO; MARUYAMA TORU; ISEYA YUKIHIKO
PA TOPPAN FORMS CO LTD
PI JP 2000048156 A 20000218 Heisei
AI JP1998-218246 (JP10218246 Heisei) 19980731
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2000
IC ICM G06K019-07
ICS G06K019-077 ; H01Q001-38 ; H01Q007-00
AB PROBLEM TO BE SOLVED: To form an **antenna** out of a metallic **evaporation** layer without being affected by the surface shape of a holding **substrate** side, and to obtain a sensitive **antenna** at low costs.
SOLUTION: An adhesive is applied to the metallic **evaporation** layer of a metallic **evaporation** sheet, and a metallic **evaporation** sheet 6 is die-cut so as to be shaped like an **antenna** in a state the metallic **evaporation** sheet 6 is covered with a peeling sheet 10 so as to be peeled, and a tack sheet is overlapped on the peeling sheet 10 so that the **antenna**-shaped metallic **evaporation** sheet 6 can be covered. After a transferring material is removed, the **antenna**- shaped metallic **evaporation** layer 8 is adhered to a coating member 5, and the peeling sheet 10 is peeled from the coating member 5 and the metallic **evaporation** layer 8, and an **antenna** constituted of the metallic **evaporation** layer of the metallic **evaporation** layer 8 is formed on the joint face side with a holding member in the coating member 5.

L80 ANSWER 2 OF 3 JAPIO COPYRIGHT 2002 JPO
AN 2000-048155 JAPIO
TI MANUFACTURE OF **NON-CONTACT IC** MODULE **ANTENNA**
IN KAGAMI YASUO; MARUYAMA TORU; ISEYA YUKIHIKO
PA TOPPAN FORMS CO LTD
PI JP 2000048155 A 20000218 Heisei
AI JP1998-218244 (JP10218244 Heisei) 19980731
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2000
IC ICM G06K019-07
ICS B42D015-10 ; G06K019-077
AB PROBLEM TO BE SOLVED: To form an **antenna** by the transfer of a metallic **evaporation** layer, and to obtain a sensitive **antenna** at a low cost.
SOLUTION: An adhesive 9 is applied to the metallic **evaporation** layer 8 of a metallic **evaporation** transfer sheet in an **antenna**-shaped pattern, and a metallic **evaporation** transfer sheet 6 is adhered through the adhesive 9 to a holding **substrate** 2. After the adhesive is hardened, the metallic **evaporation** transfer sheet 6 is peeled. Thus, the metallic **evaporation** layer can be transferred to the holding **substrate** 2 in the **antenna**-shaped pattern.

L80 ANSWER 3 OF 3 JAPIO COPYRIGHT 2002 JPO
AN 1999-272820 JAPIO
TI **NON-CONTACT IC** CARD MODULE AND ITS MANUFACTURE
IN SAWADA TASUKE; HATANAKA SHIGEKI; FURUMURA NOBUYUKI
PA MATSUSHITA ELECTRIC IND CO LTD
PI JP 11272820 A 19991008 Heisei
AI JP1998-072161 (JP10072161 Heisei) 19980320
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 99
IC ICM G06K019-07
ICS B42D015-10 ; G06K019-077
AB PROBLEM TO BE SOLVED: To provide a low-cost **non-contact IC** card module which is small in module thickness and incorporates a breakless capacitor and its manufacture.
SOLUTION: This module consists of a capacitor incorporated **substrate** where an **IC** 7 can be mounted, the **IC** 7, and a **substrate** where a **coil** 4 for an **antenna** is formed and the capacitor 6 is formed by vapor-deposition, **sputtering**, etc., on the **substrate** where the **IC** 7 is mounted, so the thickness of the capacitor 6 is several microns, or thin, so that a thin capacitor incorporated **substrate** can be obtained. The **IC** 7 is mounted on this capacitor incorporated **substrate** and the **coil** 4 for the **antenna** 7 is mounted to obtain the low- cost **non-contact IC** card module which is small in module thickness and never breaks.
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L84 ANSWER 1 OF 3 JAPIO COPYRIGHT 2002 JPO
AN 2000-215284 JAPIO
TI **NON-CONTACT IC** CARD
IN ISHIKAWA TAKAHIRO; KANAZAWA HIRONOBU
PA MITSUMI ELECTRIC CO LTD
PI JP 2000215284 A 20000804 Heisei
AI JP1999-015271 (JP11015271 Heisei) 19990125
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2000
IC ICM G06K019-07
ICS G06K019-077
AB PROBLEM TO BE SOLVED: To make a **non-contact IC** card easily printable by flattening the main surface and to improve the mechanical strength by disposing insulating layers on an **antenna coil** and in the area excepting for an area where the electronic circuit part of a **substrate** is disposed.
SOLUTION: In the case of producing a **non-contact IC** card, an **antenna coil** 2 is formed by forming the **copper** foil of a **copper** laminating **plate**, on which a **substrate** 1 and the **copper** foil are laminated, into **coil** with a method such as etching. Next, an insulating layer 4 is formed excepting for the surface of the **antenna coil** 2 and the part to dispose an electronic circuit part 3. Next, the electronic circuit part 3 is packaged so as to be electrically connected with the **coil** pattern of the **antenna coil** 2. Thus, one main surface of the electronic circuit part 3 and one main surface of the insulating layer 4 are made into almost equal height. Next, a decorative tape 5 is stuck so as to cover these insulating layer 4 and electronic circuit part 3. Then, working such as printing is applied onto one main surface 5a of the decorative tape 5 as needed. Thus, one main surface 5a of the decorative tape 5 is highly flattened.

L84 ANSWER 2 OF 3 JAPIO COPYRIGHT 2002 JPO
AN 1999-102423 JAPIO
TI PRODUCTION OF PRINTED **ANTENNA** CIRCUIT FOR **CONTACTLESS** **IC** CARD USING CONDUCTIVE PASTE AND THE **CONTACTLESS** **IC** CARD
IN ONOSE KATSUHIRO; UEHARA HIDEAKI
PA HITACHI CHEM CO LTD, JP (CO 000445)
PI JP 11102423 A 19990413 Heisei
AI JP1997-260408 (JP09260408 Heisei) 19970925
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 99, No. 4
IC ICM (6) G06K019-07
ICS (6) B42D015-10; (6) G06K019-077; (6) H04B005-02; (6) H05K003-12
ICA (6) H01Q001-38
AB PURPOSE: TO BE SOLVED:To increase communication distance, to improve productivity and to prevent such failures where a print **antenna** circuit is broken when an **IC** is connected via an anisotropic conductive film by printing a conductive paste on a **substrate** to form a circuit pattern and drying this pattern by initial drying for which temperature is specified followed by regular drying.
CONSTITUTION: rcuit pattern is formed by printing a conductive paste on a **substrate** and then drying for production of a printed **antenna** circuit that is used for a **contactless** **IC** card. In this case, the drying process includes an initial drying at 50 to 200.degree.C and a regular drying at 120 to 180.degree.C. The conductive paste uses a mixture of a 40 to 80 wt.% mixture of the flattened silver powder or flattened silver **plated** **copper** powder, 2 to 20 wt.% thermosetting resin such as phenoxy resin and a mixture of 15 to 45 wt.% organic solvent having a desirable 180 to 250.degree.C boiling point of butyl carbitol (R), etc. Then it is preferable to set a viscosity range of the paste at 10,000 to 150,000 centipoises and then at 20,000 to 100,000 centipoises.

L84 ANSWER 3 OF 3 JAPIO COPYRIGHT 2002 JPO
AN 1997-123651 JAPIO
TI **NONCONTACT IC** CARD
IN TAKIGUCHI YOSHIHIRO
PA MITSUBISHI PLASTICS IND LTD, JP (CO 000617)
PI JP 09123651 A 19970513 Heisei
AI JP1995-285024 (JP07285024 Heisei) 19951101
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 97, No. 5
IC ICM (6) B42D015-10
ICS (6) G06K019-07; (6) G06K019-077
AB PURPOSE: TO BE SOLVED:To prevent impairment of an **IC** module on the occasion when an external force is applied to a **noncontact IC** card, by holding the **IC** module and a **coil** for reception and transmission in holding recessions of a card base and also by covering the holding recessions with a cover material, in the **noncontact IC** card wherein the **coil** for reception and transmission is incorporated.
CONSTITUTION: ncontact **IC** card 10 has an **IC** module 20 and a **coil** 30 for reception and transmission incorporated, and for the purpose of incorporating them, a holding recession 41a holding the **IC** module 20 and a holding recession 41b holding the **coil** 30 for reception and transmission are formed in a card base 40. After the **IC** module 20 and the **coil** 30 for reception and transmission are held in the holding recessions 41a and 41b respectively, a cover material 60 is fixed to the card base 40 so that it covers the holding recessions 41a and 41b. While ABS resin can be used for this cover material 60, the **noncontact IC** card 10 is reinforced and can be prevented from being bent by an external force, by using a **metal plate** of stainless steel, **copper** or the like for the cover material.

L87 ANSWER 1 OF 4 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2002-102388 [14] WPIX
DNN N2002-076191
TI **Non-contact** type **integrated circuit** card system has card side **antenna** and device side **antenna** having circular shape or ellipse shape with long side in insertion direction of **IC** card.
DC P76 T04
PA (NPDE) NIPPONDENSO CO LTD
CYC 1
PI JP 2001344575 A 20011214 (200214)* 10p G06K017-00
ADT JP 2001344575 A JP 2000-162849 20000531
PRAI JP 2000-162849 20000531
IC ICM G06K017-00
ICS B42D015-10; G06K019-07; G06K019-077
AB JP2001344575 A UPAB: 20020301
NOVELTY - A card side **antenna** (24) with a **spiral** conductor **pattern** is provided to the **substrate** (2) of an **IC** card (21). A device side **substrate** is inserted inside a device main body opposite the **IC** card. A device side **antenna** with **spiral** conductor **pattern** communicates with the card side **antenna**. Both **antennas** have a circular shape or an ellipse shape with a long side in the insertion direction of the **IC** card.

DETAILED DESCRIPTION - in the insertion direction of the **IC** card.

USE - **Non-contact** type **integrated circuit** (**IC**) card system

ADVANTAGE - Prevents impossibility in communication between card side **antenna** and device side **antenna** even if **IC** card vibrates within insertion portion.

DESCRIPTION OF DRAWING(S) - The figure shows the top view of the **substrate** of an **IC** card. (Drawing includes non-English language text)

Substrate 2
IC card 21
Card side **antenna** 24

Dwg.1/20
FS EPI GMPI

L87 ANSWER 2 OF 4 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1998-418857 [36] WPIX
DNN N1998-326587
TI **Non-contact** type **IC** card using **induction**-coupling system - has **coil** formed by winding coated conducting wire spirally, such that connection with circuit pattern or **IC** chip is formed on section that is free from winding wire portions.
DC P76 T04 V02 V04 W02
PA (HITM) HITACHI MAXELL KK
CYC 1
PI JP 10171954 A 19980626 (199836)* 8p G06K019-07
ADT JP 10171954 A JP 1996-325431 19961205
PRAI JP 1996-325431 19961205
IC ICM G06K019-07
ICS B42D015-10; G06K019-077
AB JP 10171954 A UPAB: 19980911
The card has a base (30a) on which a **coil** (10) and an **IC** chip (20) are mounted. The **coil** is formed by winding a coated conducting wire spirally.

Both ends of the coated conducting wire are fixed by the winding wire portions. The connection (11) with the circuit pattern or the **IC** chip is formed at the section that is free from winding wire portion.

USE - For storing e.g. deposit information, insurance information, medical information, season-ticket information, driver's license, ID.

ADVANTAGE - Ensures reliable circuit connection between circuit pattern of connection and **IC** chip since deformation of formation part of connection in conveyance and assembly stage due to external force is prevented, hence ensuring reliable and simple manufacture of **IC** card and cost reduction of **IC** card.

Dwg.1/16
FS EPI GMPI

L87 ANSWER 3 OF 4 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1998-322951 [28] WPIX
DNN N1998-252493
TI **Contactless** smart card - includes several aerial **loops** formed in surface of housing with connections to chip contacts to enable **contact-less** communications.
DC T04 T05 W01
IN BILLEBAUD, P; THEVENOT, B
PA (SLMB) SCHLUMBERGER SYSTEMES SA; (SLMB) SCHLUMBERGER SYSTEMES; (SOLA-N) SOLAIC SA
CYC 21
PI WO 9824057 A1 19980604 (199828)* FR 19p G06K019-077
RW: AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE
W: CN JP KR US
FR 2756648 A1 19980605 (199829)
EP 941520 A1 19990915 (199942) FR G06K019-077
R: DE ES FR GB IT
CN 1238850 A 19991215 (200017) G06K019-077
JP 2001508206 W 20010619 (200140) 17p G06K019-077
EP 941520 B1 20010905 (200152) FR G06K019-077
R: DE ES FR GB IT
DE 69706559 E 20011011 (200168) G06K019-077
AB WO 9824057 A UPAB: 19980715
The card comprises a body (1) and an **integrated circuit** (3) set in the body, with a coupling aerial (4) connected to two contact blocks (6) of the **integrated circuit** (3). The aerial is made in a **spiral pattern**, the turns of which pass over the flush surface (5) of the **integrated circuit**.

The aerial may comprise a number of separate turns connected to different pairs of contacts on the contact block for the **integrated circuit**. The turns comprise conductive tracks on a **substrate**, the resistance of which is locally varied by varying the width of the tracks. The width of the tracks may vary between 3mm and 0.2 mm in order to provide the required variation in resistance.

ADVANTAGE - Enables identification and communication with chip in identification badges and remote payment systems.

Dwg.1/2
FS EPI
FA AB; GI

L87 ANSWER 4 OF 4 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 1992-367240 [45] WPIX
DNN N1992-279957
TI **Antenna** circuit for portable **IC** memory card - has **inductive coil** pattern with matching conductor paths between given **coil** turns and **coil** end.
DC P76 T04 W02
IN TAKAHIRA, K
PA (MITQ) MITSUBISHI DENKI KK; (MITQ) MITSUBISHI ELECTRIC CORP
CYC 4

PI	DE 4212808	A	19921029 (199245)*	11p	H04B005-00
	GB 2255692	A	19921111 (199246)	25p	H04B001-59
	JP 04321190	A	19921111 (199252)	7p	G06K019-07
	US 5337063	A	19940809 (199431)	10p	H01Q011-12
	GB 2284324	A	19950531 (199525)	20p	H01Q001-38
	GB 2284325	A	19950531 (199525)	20p	H01Q001-38
	GB 2255692	B	19950927 (199542)	2p	H04B001-59
	GB 2284325	B	19950927 (199542)	2p	H01Q001-38
	GB 2284324	B	19951004 (199543)		H01Q001-38
	DE 4212808	C2	19960208 (199610)	8p	H04B005-00

AB DE 4212808 A UPAB: 19931006
The **antenna** circuit allows signal interchange with an external device, using electromagnetic wares. It comprises an **antenna coil** (11) with a main **coil** section (12) provided by a sprial conductor pattern, around a **substrate** periphery having a number of adaption paths (13, 14, 15) between given **coil** turns and one end (B) of the main **coil** (12). The **coil** (11) is combined with a capacitor for forming an oscillation circuit.

A respective switch allows each number of **coil** windings to be coupled to the end (B) of the main **coil** (12), the capacitor coupled to the opposite end of the **coil** (A).

ADVANTAGE - Simple provision of required **inductance** characteristic.

1/7

L88 ANSWER 1 OF 3 WPIX COPYRIGHT 2002 DERWENT INFORMATION LTD
AN 2001-607073 [69] WPIX
DNN N2001-453177
TI Information input/output unit containing two types of non-contact information media and a radio **antenna**.
DC P76 T01 T04 W02
IN INOSE, F; KANEKO, T; **KAWAMURA, S; SHIMIZU, S**
PA (HITM) **HITACHI MAXELL KK**
CYC 93
PI WO 2001037213 A1 20010525 (200169)* JA 45p G06K017-00
AU 2001013043 A 20010530 (200169) G06K017-00
JP 2001202483 A 20010727 (200169) 14p G06K017-00
ADT WO 2001037213 A1 WO 2000-JP7901 20001109; AU 2001013043 A AU 2001-13043 20001109; JP 2001202483 A JP 2000-342325 20001109
FDT AU 2001013043 A Based on WO 200137213
PRAI JP 1999-323456 19991112
IC ICM G06K017-00
ICS B42D015-10
AB WO 200137213 A UPAB: 20011126
NOVELTY - Notebook personal computer (300) has attached reader/writer (100) that takes up two types of noncontact information media of different shapes (202,204) and has an **antenna** to communicate with noncontact information media by radio. Communication with a contact-type noncontact information medium can be reliably effected, preferably with a specified degree of freedom of the shape of the medium.
USE - Information input/output unit containing two types of non-contact information media and a radio **antenna**
DESCRIPTION OF DRAWING(S) - Diagram of computer with input/output device.
Read/write unit 100
IC card 202
IC tag 204
Notebook computer 300
Dwg.1/24
FS EPI GMPI

25mar02 10:45:21 User259284 Session D1715.1

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Set	Items	Description
S1	36086	(NONCONTACT??? OR NON()CONTACT??? OR CONTACTLESS??? OR CONTACT()LESS???)
S2	3134	S1 AND (ICS OR INTEGRATED()CIRCUIT??? OR IC OR CHIP OR CHIPS OR MEMORY OR TELECOMMUNICATION?? OR COMMUNICATION?? OR ANTENNA??? OR AERIAL?? OR (DATA OR INFORMATION)()CARRIER??)
S3	970	S1 AND COIL? ?
S4	3994	S2:S3
S5	47	S4 AND (SPUTTER???? OR EVAPD OR EVAPN OR EVAPG OR EVAPORAT????????)
S6	177	S4 AND (PLAT??? OR ELECTROPLAT????? OR METALPLAT????? OR ELECTROFORM? OR ELECTRO()FORM??????)
S7	21	S4 AND (CAST???? OR ELECTROCAST????)
S8	242	S5:S7
S9	110	S4 AND (CVD OR PECVD OR PCVD OR DEPOSIT????? OR ELECTRODEPOSIT?????)
S10	336	S5:S9
S11	288	RD S10 (unique items)
S12	38	S11/2000-2002
S13	250	S11 NOT S12
S14	5	S13 AND (STRIP OR STRIPS OR PUNCH????)
S15	3	S13 AND (EMBED????? OR IMBED??????)
S16	6	S13 AND (MMIC? OR MULTILAYER? OR (MULTI OR MULTIPLE)(1W)LAYER???)
S17	14	S14:S16
S18	79	S4 AND PLANAR???
S19	38	S4 AND SPIRAL????
S20	28	S4 AND INTEGRAL??
S21	21	S18:S20 AND RANG???

S22	16	RD S21 (unique items)
S23	15	S22 NOT S17
S24	547	S4 AND INDUCT????
S25	436	S24 AND (COIL? ? OR CONDUCT???? OR STRIP OR STRIPS OR PUNCH?????)
S26	76	S25 AND (INTEGRAL?? OR RANG????? OR SPIRAL??? OR PLANAR??? OR MMIC? OR MULTILAYER? OR (MULTI OR MULTIPLE)(1W)LAYER???)
S27	5	S25 AND READ???(2N)WRIT????
S28	81	S26:S27
S29	63	RD S28 (unique items)
S30	61	S29 NOT (S23 OR S17)
S31	12	S30/2000-2002
S32	49	S30 NOT S31
S33	27	CS=HITACHI ? AND AU=(KAWAMURA S? OR SHIMIZU S?)
S34	0	CS=HITACHI ? AND AU=(KAWAMURA, S? OR SHIMIZU, S?)
S35	2659	AU=(KAWAMURA, S? OR SHIMIZU, S?)
S36	0	AU=(KAWAMURA, S? AND SHIMIZU, S?)
S37	0	AU=(KAWAMURA S? AND SHIMIZU S?)
S38	26	RD S33 (unique items)
S39	75	S32 OR S38
S40	49	1AND39
S41	10	S1 AND LIGA
S42	8	RD S41 (unique items)
S43	0	CS=HITACHI ? AND AU=(KAWAMURA S? AND SHIMIZU S?)
S44	20	S13 AND PRECIS??????
S45	20	RD S44 (unique items)
S46	17	S45 NOT (S41 OR S29 OR S21 OR S17)
S47	36	S13 AND (NICKEL OR COPPER OR ALUMINUM OR ALUMINIUM OR CHROMIUM OR CI=CR EL OR CI=NI EL OR CI=CU EL OR CI=AL EL)
S48	36	RD S47 (unique items)
S49	29	S48 NOT (S45 OR S41 OR S29 OR S21 OR S17)

17/9/5 (Item 5 from file: 2)
DIALOG(R)File 2:INSPEC

04103729 INSPEC Abstract Number: B9204-3240C-025
Title: Sliding backshorts for planar circuits
Author(s): Lubecke, V.M.; McGrath, W.R.; Rutledge, D.B.
Author Affiliation: Div. of Eng. & Appl. Sci., California Inst. of Technol., Pasadena, CA, USA
Journal: International Journal of Infrared and Millimeter Waves vol.12, no.12 p.1387-97
Publication Date: Dec. 1991 Country of Publication: USA
CODEN: IJIWDO ISSN: 0195-9271
U.S. Copyright Clearance Center Code: 0195-9271/91/1200-1387$06.50/0
Language: English Document Type: Journal Paper (JP)
Treatment: Practical (P)
Abstract: The superconductor-insulator-superconductor (SIS) tunnel junction is an extremely sensitive heterodyne detector at millimeter and submillimeter wavelengths. The large inherent capacitance associated with this device results in a substantial impedance mismatch with typical *antennas* and, therefore, requires a tuning circuit for optimum results. At frequencies where waveguide dimensions are realizable, impedance matching can be accomplished by *embedding* the detector in a waveguide circuit with adjustable waveguide backshorts. At higher frequencies, where waveguide dimensions become prohibitively small, a planar transmission line *embedding* circuit provides a reasonable alternative. Typically, such planar circuits offer no post-fabrication adjustability, resulting in demanding materials and design requirements. An adjustable planar *embedding* circuit based on coplanar transmission lines with movable *noncontacting* shorting elements has been developed. The shorting elements each consist of a thin metallic *plate* with an optimized arrangement of rectangular holes, placed along the insulated metallic transmission line to provide a periodic variation of the line impedance. A scale model (1-5 GHz) has shown that a large reflection coefficient, mod s/sub 11/ mod >or=-0.5 dB, can be achieved with these sliding elements. A low frequency tuning circuit incorporating these shorting elements has been tested to demonstrate practical tuning ranges. (10 Refs)

3/25/02 09/914,077

17/9/10 (Item 1 from file: 94)
DIALOG(R)File 94:JICST-EPlus

02982537 JICST ACCESSION NUMBER: 96A0452033 FILE SEGMENT: JICST-E
Practical application of CMP technology and its problem. Shibayama machine Ltd.. CMP equipment "SPP series".
KIDA HIROAKI (1)
(1) Shibayamakikai
Denshi Zairyo(Electronic Parts and Materials), 1996, VOL.35,NO.5, PAGE.49-52, FIG.8, REF.8
JOURNAL NUMBER: F0040AAH ISSN NO: 0387-0774
UNIVERSAL DECIMAL CLASSIFICATION: 621.382.002.2
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Introduction article
MEDIA TYPE: Printed Publication
ABSTRACT: CMP (chemical and mechanical polishing) equipment made by Shibayama Machinery Co., Ltd. is presented. SPP-600 is an equipment developed for basic research and development and suitable for searching the polishing parameters for mass-production. SPP-600AT is a mass production equipment having special features such as 1 *platen* and 2 carriers, dry in/wet out (precleaning), *non*-*contact* wafer carrier and others.

42/9/6 (Item 6 from file: 2)
DIALOG(R)File 2:INSPEC

5796718 INSPEC Abstract Number: A9804-4278-004, B9802-4190-008
Title: Refractive microlens arrays made by *contactless* embossing
Author(s): Picard, A.; Ehrfeld, W.; Lowe, H.; Muller, H.; Schulze, J.
Author Affiliation: Inst. of Microtechnol. Mainz GmbH, Germany
Journal: Proceedings of the SPIE - The International Society for Optical Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA) vol.3135 p.96-105
Publisher: SPIE-Int. Soc. Opt. Eng,
Publication Date: 1997 Country of Publication: USA
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(1997)3135L.96:RMAM;1-L
Material Identity Number: C574-97237
U.S. Copyright Clearance Center Code: 0277-786X/97/$10.00
Conference Title: Precision Plastic Optics for Optical Storage, Displays, Imaging, and Communications
Conference Sponsor: SPIE
Conference Date: 30-31 July 1997 Conference Location: San Diego, CA, USA
Language: English Document Type: Conference Paper (PA); Journal Paper (JP)
Treatment: Experimental (X)
Abstract: *Contactless* embossing of microlenses (CEM) with *LIGA* molding tools is a new fabrication techniques for the production of refractive microlens arrays which combines high accuracy in the micrometer range, cost-effective production of the devices, and cost-effective high precision mounting concepts. The name refers to the fact that the surface of the microlenses has no contact with the embossing die during the shaping of the surface relief. A high precision matrix of holes made by *LIGA* microfabrication is pressed onto a thermoplastic sample which is heated. The material bulges into the openings of the molding tool due to the applied pressure and forms lens-like spherical structures. The embossing die touches the lens material only outside the lens area. High-speed microlenses with f/<f/4 and diameters of the lens aperture between 30 mu m and 500 mu m have been fabricated in PMMA and PC. Excellent uniformity within the microlens arrays are achieved by using *LIGA* microfabricated embossing dies. In addition to the excellent optical performance of the microlenses, the CEM method assists hybrid integration in micro-opto-electro-mechanical (MOEM) systems by providing precise auxiliary structures for easy and cost-effective mounting and adjusting. (14 Refs)
Subfile: A B
Descriptors: electromechanical effects; high-speed optical techniques; integrated optics; lenses; measurement errors; micromechanical devices; optical fabrication; optical polymers

46/9/8 (Item 1 from file: 6)
DIALOG(R)File 6:NTIS

1445077 NTIS Accession Number: NTN89-0168
Contactless Coupling for Power and Data: The alignment of this flat-*plate* interface is not critical
(NTIS Tech Note)
National Aeronautics and Space Administration, Washington, DC.
Corp. Source Codes: 011249000
Mar 89 1p
Languages: English
Journal Announcement: GRAI8916
FOR ADDITIONAL INFORMATION: Contact: NASA Technology Transfer Div., PO Box 8757 BWI Airport, MD 21240; (301) 621-0100 ext 241. Refer to GSC-13059/TN.
NTIS Prices: Not available NTIS
Country of Publication: United States
This citation summarizes a one-page announcement of technology available for utilization. An experimental flat-*plate* coupling transmits digital data signals and electrical power across a small gap between two modules. Unlike multiple-pin electrical connectors, the two halves of the coupling do not have to be aligned *precisely* for mating; thus, the coupling concept may be a useful substitute for electrical connectors in equipment that has to be assembled by robots, remote manipulators, or humans working in protective clothing or otherwise restricted in dexterity. The coupling includes a power transformer operating at a frequency of 20 kHz. Each of the mating modules contains half of the pot-shaped core of the transformer and a spiral winding. Two versions have been built: one to transfer 100 W of power, the other to transfer 1,000 W. The transformer is designed to operate at maximum efficiency with a gap of 10 to 20 mils between the halves of the core.
Descriptors: Couplings; *Optical *communication*

3/25/02 09/914,077

40/9/7 (Item 7 from file: 2)
DIALOG(R)File 2:INSPEC

5236885 INSPEC Abstract Number: B9605-2575-082, C9605-3240D-010
Title: A *non*-*contact* *inductive* position sensor for use in micromachines
Author(s): Zmood, R.B.; Zhang, Y.C.; Yu, P.L.
Author Affiliation: Dept. of Electr. Eng., R. Melbourne Inst. of Technol., Vic., Australia
Conference Title: 8th International Conference on Solid-State Sensors and Actuators and Eurosensors IX. Digest of Technical Papers (IEEE Cat. No.95TH8173) Part vol.1 p.664-6 vol.1
Publisher: Found. Sensors & Actuator Techol, Stockholm, Sweden
Publication Date: 1995 Country of Publication: Sweden 3 vol. (934+1030+85) pp.
ISBN: 91 630 3473 5 Material Identity Number: XX95-00959
Conference Title: Proceedings of the International Solid-State Sensors and Actuators Conference - TRANSDUCERS `95
Conference Date: 25-29 June 1995 Conference Location: Stockholm, Sweden
Availability: IVA, Box 5073, S-102 42 Stockholm, Sweden
Language: English Document Type: Conference Paper (PA)
Treatment: Practical (P); Experimental (X)
Abstract: A need has arisen in research on micromachines for microposition sensors which are less affected by scaling laws than existing capacitive sensors. This paper describes the development and operation of a *non*-*contact* *inductive* position sensor for use in micromagnetic bearings. As the sensor footprint area, in the micromachines being considered, will be less than 1 mm square the sensor *coil* inductances and impedance levels are small, and the parasitic and demodulator input capacitances begin to have a major influence on the transducer operation. To minimize the loading effect of these capacitances wideband current to voltage (I-V) converters have been introduced to match the output of the sensor *coils* to the input of the signal conditioner circuit. Test results for these I-V converters are presented. Also overall test results of the position transducers showing transducer linearity and sensitivity for a *range* of sensor *coils* are presented. (4 Refs)
Subfile: B C
Descriptors: analogue-digital conversion; demodulators; eddy currents;

40/9/11 (Item 11 from file: 2)
DIALOG(R)File 2:INSPEC

04045680 INSPEC Abstract Number: B9201-8520B-040
Title: *Noncontact* rotary sensors for automotive use
Author(s): Hale, S.A.
Conference Title: Eighth International Conference on Automotive Electronics (Conf. Publ. No.346) p.203-7
Publisher: IEE, London, UK
Publication Date: 1991 Country of Publication: UK xii+218 pp.
ISBN: 0 85296 525 7
Conference Date: 28-31 Oct. 1991 Conference Location: London, UK
Language: English Document Type: Conference Paper (PA)
Treatment: Practical (P)
Abstract: As automotive systems develop in their complexity and performance a need has emerged for *noncontact* rotary position sensors which offer significant durability enhancements over traditional resistive track rotary devices. Such reliability improvements are particularly important when the sensor is to be used with safety critical chassis and power-train management systems. *Contactless* rotary sensors can be devised using variable *inductance* *planar* *coils* , these being etched onto standard printed circuit boards. Such sensors can then be driven and decoded using custom oscillator and switching circuitry, conveniently integrated into a single ASIC *chip*. Various configurations of sensor are described, together with some of the design techniques used to devise sensors which meet the automotive industry requirements for quality, durability and manufacturability. Typical performance results will also be illustrated in representative automotive applications. (3 Refs)
Subfile: B
Descriptors: automotive electronics; electric sensing devices

40/9/14 (Item 14 from file: 2)
DIALOG(R)File 2:INSPEC

03400981 INSPEC Abstract Number: C89043733
Title: Self-powered EEPROM swaps data
Author(s): Leonard, M.
Journal: Electronic Design vol.37, no.6 p.105-6
Publication Date: 23 March 1989 Country of Publication: USA
CODEN: ELODAW ISSN: 0013-4872
Language: English Document Type: Journal Paper (JP)
Treatment: Applications (A); New Developments (N); Practical (P); Product Review (R); Experimental (X)
Abstract: Describes how RF coupling powers data-secure EEPROM and forms pipeline to host system for *contactless* data transfers. The third-generation intelligent EEPROM from Catalyst Semiconductor eliminates the exposure to mechanical wear that's typical of such devices. The EEPROM uses RF energy for both the power source and serial *communication*. *Inductive* coupling between two *coils*-one mounted in the card reader and the other encapsulated in the card-powers the EEPROM and transmits data to and from the *memory* without electrical contact between the card and reader. A so-called smart-card EEPROM, the new 4-kbit CAT35C904 features a security mode that requires the entry of an access code word before a portion of the *memory* can be accessed for *reading*, *writing*, or erasing. Potential applications include credit cards, telephone charge cards, security locks and access control, industrial process-flow tracking, and military dog tags. (0 Refs)
Subfile: C
Descriptors: PROM; smart cards

40/9/31 (Item 1 from file: 94)
DIALOG(R)File 94:JICST-EPlus

03827604 JICST ACCESSION NUMBER: 98A0918887 FILE SEGMENT: JICST-E
Development of CICC(*Contactless* *Integrated* *Circuit* Card) *Reader*/*Writer*. Design of *IC* Card *Reader*/*Writer* Conforming to ISO/IEC 10536.
OGAWA YUKIO (1)
(1) Omron Corp.
Omron Tech, 1998, VOL.38,NO.3, PAGE.288-292, FIG.7, TBL.3
JOURNAL NUMBER: S0266AAU ISSN NO: 0474-1315 CODEN: OMTKA
UNIVERSAL DECIMAL CLASSIFICATION: 621.37+
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Original paper
MEDIA TYPE: Printed Publication
ABSTRACT: Recently, *IC* cards have been attracting increasing attention. Their highly functional characteristics including high security performance are one of the reasons for this. In addition, the CICC ensures high durability and ease of maintenance because it has no built-in contact. OMRON has developed an *IC* card *reader*/*writer* for the CICC that conforms to ISO/IEC10536. This CICC is now almost finished with standardization. During the development of this *IC* card *reader*/*writer*, OMRON attached importance to the following. (1) Realization of High-frequency Power Transmission Circuit (2) Realization of highly reliable decoding of data from CICC Efficient power transmission to the CICC is ensured by applying a ferrite core to the *coil*, which improved the Q of the *coil*. Furthermore, the *coil* is part of the LC resonant circuit of the *IC* card *reader*/*writer*, which makes a reduction in impedance. As a result, this *IC* card *reader*/*writer* operates at low voltage. The conventional *IC* card *reader*/*writer* cannot decode data from cards if there is a difference in subcarrier between the *IC* card *reader*/*writer* and cards. This has been a problem awaiting solution. As a countermeasure, this *IC* and *reader*/*writer* has been designed so that its subcarrier will synchronize with the subcarrier of the CICC for each command or response. (author abst.)

40/9/32 (Item 2 from file: 94)
DIALOG(R)File 94:JICST-EPlus

03621563 JICST ACCESSION NUMBER: 98A0632432 FILE SEGMENT: JICST-E
Development of *Contactless* Access Control Reader. *Contactless* *Communication* Technique for Radio-Frequency Identification.
MORIKAWA KAZUNORI (1)
(1) Omron Corp.
Omron Tech, 1998, VOL.38,NO.2, PAGE.142-146, FIG.8, TBL.2, REF.2
JOURNAL NUMBER: S0266AAU ISSN NO: 0474-1315 CODEN: OMTKA
UNIVERSAL DECIMAL CLASSIFICATION: 681.327.2
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Commentary
MEDIA TYPE: Printed Publication
ABSTRACT: A *non*-*contact* access control system using *non*-*contact* ID cards is better than a system using cards with magnetic stripes in terms of security, convenience, and maintenance. Both *non*-*contact* and magnetic card readers can be connected to the same access control system, simplifying overall system design and operation. As the *non*-*contact* interface, the system uses the V600 *communications* method, which is used mainly in factory automation. The 530-kHz carrier frequency of the V600 method is higher than that of surrounding noise, greatly reducing any affects of surrounding noise on ID *communications*. The following technical results of the *non*-*contact* card reader have achieved an ID *communications* *range* of 7cm for *non*-*contact* cards. (1) The transmitting *coil*'s shape has been optimized to increase the ID *communications* *range* under regulations for radio stations operating with extremely low power as specified in the Japanese Radio Law. (2) A clock synchronized with the ID *communications* circuit has been provided for the DC-DC converters in the reader so that the switching noise of the converters will not affect ID *communications*. (author abst.)
DESCRIPTORS: *contactless* measurement; *IC* card; reader; identification; security system; electromagnetic *induction*; radio transmission; system design; magnetic flux distribution

40/9/46 (Item 16 from file: 94)
DIALOG(R)File 94:JICST-EPlus

00776302 JICST ACCESSION NUMBER: 89A0556119 FILE SEGMENT: JICST-E
Contactless *read*/*write* FI card system. New power transmission and *communications* system.
FUKURA MASASHI (1); NISHINA TERUYA (1)
(1) Omron Tateishi Electronics Co.
Omron Tech, 1989, VOL.29,NO.2, PAGE.199-204, FIG.9, TBL.1
JOURNAL NUMBER: S0266AAU ISSN NO: 0474-1315 CODEN: OMTKA
UNIVERSAL DECIMAL CLASSIFICATION: 658.52
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Commentary
MEDIA TYPE: Printed Publication
ABSTRACT: Paper tapes, floppy disks and other media are in wide use to store and transfer programs and data for NC machine tools. The innovative FI card system has been developed as a *contactless* data *read*/*write* *memory* *chip* that can be applied under harsh environments such as dusty or oily factories and plants. An electromagnetic coupling system with *coils* is introduced in order to transmit power to the card as well as to send and receive signals to and from the card. With amplitude modulation, data is transmitted between the card and the *reader*/*writer*. Using the power *coil* and the signal *coil*, transmission is achieved both ways at the transfer rate of 55kbps. The *reader*/*writer* is provided with a double buffer to curtail the buffer *memory* and to speed up the transfer. *Reading* and *writing* can be achieved between the card and the *reader*/*writer* at a distance of up to 10mm. The error is 10-8 or less. This highly reliable card system is basically intended for NC machine tools, but its applications as an external *memory* are expected in many other fields.(author abst.)
DESCRIPTORS: FMS; CIM(manufacturing); master slave system; production system; NC machine tool; data writing; data reading; signal

40/9/47 (Item 17 from file: 94)
DIALOG(R)File 94:JICST-EPlus

00776301 JICST ACCESSION NUMBER: 89A0556118 FILE SEGMENT: JICST-E
Tool ID system utilizing mutual *induction*. *Induction* *coil* design for long distance *communication*.
MORIKAWA KAZUNORI (1); IWAMAE YOSHIKI (1)
(1) Omron Tateishi Electronics Co.
Omron Tech, 1989, VOL.29,NO.2, PAGE.191-198, FIG.11, TBL.4
JOURNAL NUMBER: S0266AAU ISSN NO: 0474-1315 CODEN: OMTKA
UNIVERSAL DECIMAL CLASSIFICATION: 658.52 621.91
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Commentary
MEDIA TYPE: Printed Publication
ABSTRACT: Recently, the Tool Identification System with *non*-*contact* reprogrammable *Data* *Carrier*(DC) has played an important role in tool management systems of Machining Center. *Read* *Write* Head(RWH) utlizes mutual *induction* for power transmission to the DC without a battery. The DC has a ferrite core to isolate a *coil* from the effect of surrounding metal, and it includes an EEPROM(Electrically Erasable Programmable ROM) as *memory*. It is necessary to decide the dimensions of the *coil* of the RWH to get a long *non*-*contact* *communication* distance. The coupling constant k was used to evaluate the coupling strength between the *coils* of the DC and the RWH, because the coupling constant k is proportional to the efficiency of power transmission to the DC in the case of small coupling. As a result, a ferrite core of 14mm in diameter as *coil* of the RWH for long distance in the DC of 12mm in diameter was chosen, after the measurement of the coupling constant k.(author abst.)
DESCRIPTORS: FMS; CIM(manufacturing); master slave system; production system; machine tool; tool management; data writing; data reading; electromagnetic coupling; signal transmission; *inductor*; maintenance

42/9/4 (Item 4 from file: 2)
DIALOG(R)File 2:INSPEC

6042123 INSPEC Abstract Number: A9822-4278-003, B9811-4190-004
Title: Compact self-aligning assemblies with refractive microlens arrays made by *contactless* embossing
Author(s): Schulze, J.; Ehrfeld, W.; Muller, H.; Picard, A.
Author Affiliation: Inst. fur Mikrotech. Mainz GmbH, Germany
Journal: Proceedings of the SPIE - The International Society for Optical Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA) vol.3289 p.22-32
Publisher: SPIE-Int. Soc. Opt. Eng,
Publication Date: 1998 Country of Publication: USA
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(1998)3289L.22:CSAA;1-X
Material Identity Number: C574-98130
U.S. Copyright Clearance Center Code: 0277-786X/98/$10.00
Conference Title: Micro-Optics Integration and Assemblies
Conference Sponsor: SPIE
Conference Date: 29-30 Jan. 1998 Conference Location: San Jose, CA, USA
Language: English Document Type: Conference Paper (PA); Journal Paper (JP)
Treatment: Practical (P); Experimental (X)
Abstract: The hybrid integration of microlenses and arrays of microlenses in micro-optical systems is simplified using *contactless* embossing of microlenses (CEM) in combination with *LIGA* microfabrication. CEM is anew fabrication technique for the production of precise refractive microlens arrays. A high precision matrix of holes made by *LIGA* technique is used as a compression molding tool to form the microlenses. The tool is pressed onto a thermoplastic sample which is heated close to the glass transformation temperature of the material. The material bulges into the openings of the molding tool due to the applied pressure and forms lens-like spherical structures. The name refers to the fact that the surface of the microlens does not get in contact with the compression molding tool during the shaping process and optical quality of the surface is maintained. Microlenses and arrays of microlenses with lens diameters from 30 mu m up to 700 mu m and numerical aperture values of up to 0.25 have been fabricated in different materials. Cost-effectiveness in the production process, excellent optical performance and the feature of easy replication are the main advantages of this technique. The most promising feature of this method is the possibility to obtain self-aligned assemblies then can be further integrated into a micro-optical bench setup. The CEM fabrication method in combination with *LIGA* microfabrication considerably enhances the hybrid integration in micro-optical devices which results in a more cost-effective production of compact micro-opto-electro-mechanical systems. (20 Refs)
Subfile: A B

42/9/5 (Item 5 from file: 2)
DIALOG(R)File 2:INSPEC

5817698 INSPEC Abstract Number: A9805-4285-006, B9803-4190-005
Title: *Contactless* embossing of microlenses-a new technology for manufacturing refractive microlenses
Author(s): Schulze, J.; Ehrfeld, W.; Lowe, H.; Michel, A.; Picard, A.
Author Affiliation: Inst. of Microtechnol. Mainz GmbH, Germany
Journal: Proceedings of the SPIE - The International Society for Optical Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA) vol.3099 p.89-98
Publisher: SPIE-Int. Soc. Opt. Eng,
Publication Date: 1997 Country of Publication: USA
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(1997)3099L.89:CEMT;1-8
Material Identity Number: C574-97260
U.S. Copyright Clearance Center Code: 0277-786X/97/$10.00
Conference Title: Micro-Optical Technologies for Measurement, Sensors and Microsystems II and Optical Fiber Sensor Technologies and Applications
Conference Sponsor: SPIE; Eur. Opt. Soc. Comm. Eur. Communities
Conference Date: 18-20 June 1997 Conference Location: Munich, Germany
Language: English Document Type: Conference Paper (PA); Journal Paper (JP)
Treatment: Practical (P); Experimental (X)
Abstract: *Contactless* embossing of microlenses (CEM) is a new fabrication technique for the production of refractive microlens arrays. The basic idea is that the surface of the microlenses has no contact with the compression molding tool during the shaping of the surface relief. A high precision matrix of holes made by *LIGA* microfabrication is used as a compression molding tool. This tool is pressed onto a thermoplastic sample which is heated close to the material's transformation temperature. The material bulges into the openings of the molding tool due to the applied pressure. If process conditions are properly set, the material forms lens-like spherical structures. Microlenses and arrays of microlenses with lens diameters between 30 mu m and 500 mu m have been fabricated in thermoplastic material (PMMA). Besides highly accurate microlens arrays, CEM also provides the potential of cost-effective production and high precision mounting concepts. (14 Refs)
Subfile: A B
Descriptors: electroforming; integrated optics; lenses; optical fabrication; replica techniques; X-ray lithography
Identifiers: *contactless* embossing; microlenses; refractive microlens arrays; fabrication technique; high precision matrix of holes; *LIGA*